

# PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING AGENTS • SINCE 1915



A CONOVER • MAST PUBLICATION

205 EAST 42nd STREET, NEW YORK

UTR v.13 Jy-D 1942

# HOW TO SAVE TIME IN GETTING STEEL



**H**ERE ARE TWO SUGGESTIONS. Follow them and you'll save time—the most important thing in the world today—in getting the steel you need for *Production for Victory*.

1. Keep up to date on Governmental regulations and revisions—and follow procedure as established by the War Production Board.

2. Be sure to give your steel supplier **COMPLETE** information on your inquiries or orders. Always include:

- ★ Government contract number and specification (department, number, date) . . . War Production Board allocation order . . . preference rating certificate or endorsement . . . Army-Navy Munitions Board code number.
- ★ Complete details on chemistry, physical properties and processing requirements (heat treatment, hardenability, etc.)
- ★ Full information on use of the steel. Be specific. Do not merely say "gears," but "a certain type of gear for a certain type and size of tank" or whatever the application may be. Sometimes several grades of steel may be suitable, but one may be more quickly available.

★ Make certain that all other necessary information is furnished—such as finishing required at the mill, nature of your first operation (for instance, is it cold shearing, saw cutting or other?), code painting specifications, shipping instructions, etc. The absence or incorrectness of these details may result in loss of time which cannot be recovered.

Complete information at the time the inquiry is made or the order placed will speed up clearance through Governmental agencies. It will speed up production of the steel and delivery to you. And, incidentally, it will save you the cost of extra correspondence, telegrams and 'phone calls.

We at Republic are working closely with Governmental agencies and customers. We're doing everything possible to help clear vital orders through to the mills so that the steel can be processed in the shortest possible time. Won't you help us to help you speed *Production for Victory* by furnishing complete information when you need steel?



## REPUBLIC STEEL CORPORATION

Alloy Steel Division Sales Offices: Massillon, Ohio • General Offices: Cleveland, Ohio

Berger Manufacturing Division • Culvert Division • Niles Steel Products Division

Steel and Tubes Division • Union Drawn Steel Division • Truscon Steel Company

• • • Export Department: Chrysler Building, New York, New York • • •



ALLOY and CARBON STEELS • STAINLESS STEEL • PLATES • TIN PLATE • NUTS • BOLTS • RIVETS • NAILS • PIG IRON  
BARS and SHAPES • STRIP • SHEETS • PIPE and TUBING • FARM FENCE • WIRE • FABRICATED STEEL PRODUCTS

Tech



***American Production is Speeding the Day of Victory—  
and Century Electric Motors Aid Production***



Photo by  
U. S. Army  
Signal Corps.

## **CENTURY MOTORS ARE AS TOUGH AS THE LAND BATTLESHIPS THEY HELP TO PRODUCE**

***They Withstand the Terrific Shock Loads and  
Power Demands of the Heaviest Machine Tools***

★ The rugged construction of Century Motors, including ribbed frame and braced end brackets, provides the rigidity with which to withstand the heavy shock loads of forming, forging, shaping, and shearing heavy plates and other heavy parts used in armament production.

Century Motors can take the heaviest shocks; working on three-shift production day after day — they're as tough as the land battleships they help produce.

A wide variety of sizes and types of Century Motors — those with standard general purpose characteristics and also those with special speed torque characteristics — are found on machine tools ranging from those heavy brutes forming the heaviest armor to those delicate machines producing the finest precision instruments.

The Century Sales Engineer near you will gladly help you select the right motor for your production machine or for application to any product you sell. His experience will save time and money — call him today.



**CENTURY ELECTRIC COMPANY**  
1806 Pine Street St. Louis, Missouri  
Offices and Stock Points in Principal Cities

260

***One of the Largest Exclusive Motor and Generator Manufacturers in the World***

# *There's a difference!*



*The lucky penny... a symbol of luck left to chance*



*The Gaylord seal... a mark of PLANNED dependability!*

- Corrugated and Solid Fibre Shipping Containers
- Folding and Paraffined Cartons
- Kraft Paper Bags and Sacks
- Kraft Wrapping Paper and Specialties

## **GAYLORD CONTAINER CORPORATION**

**General Offices: SAINT LOUIS**

New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City • Seattle • Indianapolis  
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Memphis • Kansas City • Milwaukee • Bogalusa • Weslaco • Greensboro

*When writing Gaylord Container Corporation please mention Purchasing*

# Why G-E Fluorescent Lamps stay brighter longer"

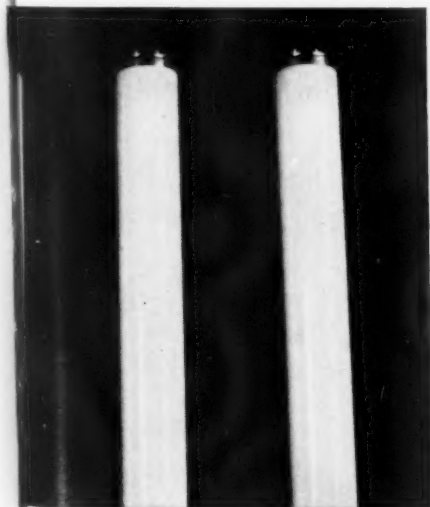
**A PICTURE STORY THAT'S WORTH READING.** You want as much light for your money as you can get . . . to help speed war production, reduce waste, and avoid accidents. Here are just a few of the reasons G-E MAZDA F lamps are better today than ever before—why they give such dependable service—why they stay brighter longer.



**1** DR. W. A. ROBERTS OF G-E LAMP DEVELOPMENT LABORATORY is studying the synthetic phosphors used in coating G-E MAZDA Fluorescent lamps to make them *stay brighter longer*. Up to June 1, General Electric had put approximately 450,000 man-hours of research into Fluorescent lamp improvements with the objective of giving the user more and more light for less and less cost.



**2** A TINY DROP OF MERCURY, like this, accurately measured and safely injected into G-E MAZDA F lamps by an automatic machine specially designed by G-E engineers . . . results in lower cost and improved operations.



**3** UNRETOUCHED PHOTO of 3 40-watt G-E MAZDA F lamps. One is brand new, second has burned 2030 hours, third has burned 2650 hours (150 hours more than rated life). Note absence of end-blackening.



**4** GREATER COLOR UNIFORMITY is assured when it is controlled and checked by "electric eyes" with color filters. This is only one of the many routine checks constantly made in General Electric's Fluorescent lamp factories.



**5** WHEN YOU BUY fluorescent lamps, look for the G-E monogram. It means they *stay brighter longer*. For best results it is advisable that you always use certified lighting equipment.

**G-E MAZDA LAMPS**

**GENERAL  ELECTRIC**





# IT STAYS PUT

One thing above all others makes Formica the valuable material it is in so many industries — electrical, mechanical, aviation, chemical, and that is: once a Formica part is installed it remains unchanged almost regardless of conditions. It really stays put!

When you build a part of Formica you can challenge the elements to do their worst and they won't accomplish much.

Changes in temperature do not alter its dimensions appreciably. Humidity or lack of it leaves it untouched. Electrical currents can't push through it because it is an excellent insulator for high or low frequency currents. No atmospheric condition, anywhere in the world, can cause it to corrode, or roughen and destroy its surface, because it is inert chemically . . . The Formica data book tells this story in terms of precise engineering tests. Send for it.

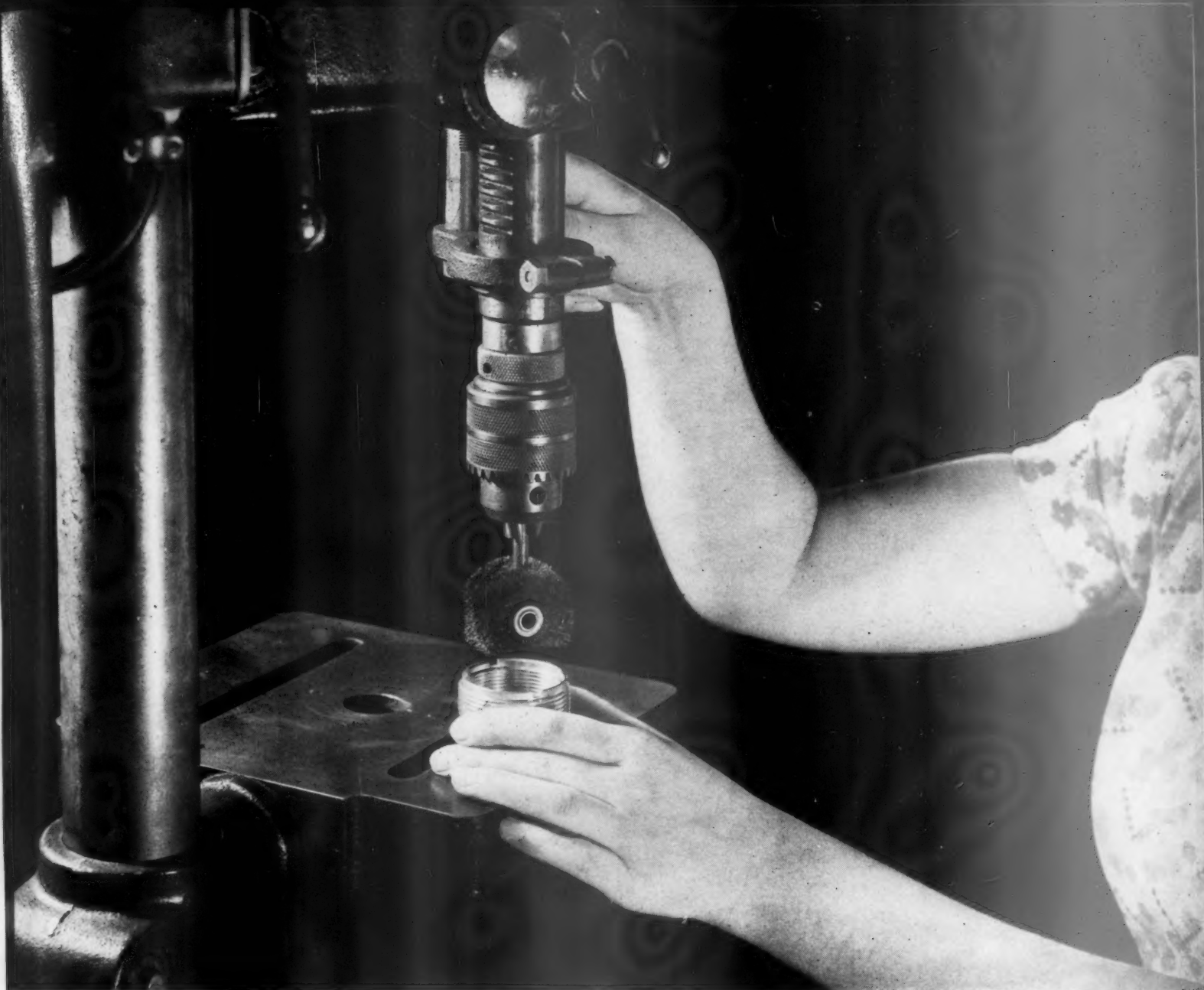
## FORMICA

THE FORMICA INSULATION COMPANY

4665 SPRING GROVE AVENUE

CINCINNATI, OHIO

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## The brush that did three jobs five times as fast

• They had a problem when they came to cleaning the interior of these brass shell parts. Besides internal threads, there were seven drilled holes in sides and bottom, and opposing slots at the top. Burrs had to be removed from all.

They tried tiny rasp-tipped power tools to take the drilling burrs off—and nicked the threads and sides wherever they were touched. That meant rejects. With seven holes to

clean, the process was slow—and this a production job, calling for thousands of pieces a day.

The Osborn brush shown above licked the problem. This brush is designed to operate in ordinary, bench-type drill presses. In a single operation it cleans threads and slots, removes all drilling burrs, and for good measure polishes the inner bottom and sides with a fine smooth finish. And it does it in one-fifth the

time formerly required just to remove the drilling burrs.

Whatever your cleaning, finishing or polishing problems, you'll find your nearby Osborn representative ready to help you cut time and costs and speed production with Osborn power-driven brushes. He will be glad to arrange for a factory-conducted O.B.A. (Osborn Brushing Analysis) of the operations in your plant giving you the most difficulty. Maximum output is the goal of all of us. *The Osborn Manufacturing Company, 5401 Hamilton Avenue, Cleveland, Ohio.*



**WORLD'S LARGEST MANUFACTURER  
OF BRUSHES FOR INDUSTRY**

# MACKLIN GRINDING WHEELS

Out of the scientific research thoughts of MACKLIN experimental engineers come invaluable new means and methods, better and more uniform product control and development, that means higher quality and longer and more efficient production life for MACKLIN Grinding Wheels. *Ask for the helpful services of a MACKLIN Sales Engineer.*

*For Victory*  
★ **"PROTECT  
YOUR  
PRODUCTION"** ★

## MACKLIN COMPANY

Manufacturers of GRINDING WHEELS — JACKSON, MICHIGAN, U. S. A.

Distributors in all principal cities

Sales Offices: — Chicago — New York — Detroit — Pittsburgh — Cleveland — Cincinnati — Milwaukee — Philadelphia

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# MAXIMUM PRODUCTION-NOW!

**83 MILLION MILES  
WITHOUT A WHEEL  
BEARING FAILURE.**

*Automotive*

**AFTER 14 YEARS, NO  
MEASURABLE WEAR  
IN STEAM TURBINES.**

*Power Plant*

**32,500 HRS. OF  
OPERATION AND  
NO STUCK RINGS.**

*Power Plant*

**DRILL LIFE TRIPLED . . .  
FEED AND SPEED INCREASED**

*Machine Shop*

**Y**OU can increase engine and machine hours and decrease down-time for repairs and replacements . . . with properly selected lubricants.

You cannot have efficient operation with improper lubrication. The more suitable the lubricant, the longer the equipment will operate, and the more it will produce.

Users of properly selected Texaco Lubricants are signally successful in achieving maximum production in various fields. The starred results displayed above are typical.

And in the several fields listed in the

panel, Texaco has won top position over all other brands.

Trained Texaco Lubrication Engineers will gladly cooperate in the selection and application of lubricants and cutting coolants scientifically produced to do their job in today's continuous day-and-night operation.

Phone the nearest of more than 2300 Texaco distribution points in the 48 States for Texaco Products and Engineering Service, or write:

The Texas Company,  
135 East 42nd Street,  
New York, N. Y.

**Care for your Car  
..for your Country**

## THEY PREFER TEXACO

- ★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.
- ★ More locomotives and cars in the U. S. are lubricated with Texaco than with any other brand.
- ★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.
- ★ More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.
- ★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.



Tune in the TEXACO STAR  
THEATRE every Sunday night  
—CBS



## TEXACO Lubricants and Fuels

### FOR ALL INDUSTRIES

HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

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☐ **1. COMMUNICATION SYSTEMS** —

Circular showing and explaining the features of the various component parts used in making up two-way private or amplified communication systems. Shows different models of master stations and substations. Attached is a survey sheet which permits those interested to list their intercommunication requirements. From the data furnished on this sheet, the company can prepare a detailed proposal for a system to meet the particular needs. Executone Communication Systems.

☐ **2. LIGHTING MANUAL** — A very useful manual designed to meet the need for up-to-date data on the use of lighting as a production tool in solving the problems of production rejects, employee fatigue, accidents and morale, greater illumination, etc. Main section is devoted to the solutions for 21 lighting problems most commonly encountered in plants converting to war production. Book covers both fluorescent and incandescent lighting, and shows the applications of many different types of fixtures. Very useful manual on lighting. Benjamin Electric Company.

☐ **3. PAINT SELECTOR** — "How to Choose and Use Your Maintenance Paints" is in the form of two large

charts—the first tells how to choose the paint according to the surface to be covered, and the second gives the answers on how and why to use the paint selected. These colorful and large charts are designed for quick and easy reference, and are extremely useful to have around any plant. They fold up between the covers of a standard size folder for easy filing. On the back cover are handy measuring tables and paint estimators for interiors and exteriors of different sizes. American-Marietta Company.

☐ **4. SANITATION** — "The Scope of Sanitation" gives a very complete treatment of the sanitation problems in industrial plants. Covers disinfectants, deodorization, general cleaners, liquid soap and dispensers, paper towels, utility vending cabinets, insecticides and dispensers, floor maintenance products, and many other useful subjects. Book is full of photographs of the various products and their method of installation and use. Is a very useful book on plant sanitation. West Disinfecting Company.

☐ **5. TAPS AND TAPPING** — "Facts About Taps and Dies" is a comprehensive book on all types of taps and how they are measured, lubricated, sharpened and used. Covers the sources of tapping

trouble and how to correct them. A complete set of tables gives tap dimensions, tolerances, thread forms, etc. Book forms a basic text book on taps, starting with tap and thread screw terms and proceeding on to the proper selection of taps for all types of work. A very useful and well done book. Greenfield Tap & Die Corp.

☐ **6. CUTTER BITS** — "How to Grind Lathe Tool Cutter Bits" is a 12-page informative booklet full of drawings and photographs showing how to grind these bits. The text is concise and easy to understand, and gives ideas and methods useful to any one handling lathe tools. Note: Booklet costs 10 cents. Please write direct to South Bend Lathe Works, 457 Niles Ave., South Bend, Inc.

☐ **7. CHART ABOUT FILES** — A large wall chart giving useful information about various types of files. Shows large photographs of files of different shapes, with short descriptive caption and tables of specifications. Tells what kind of file to use for various kinds of work, and shows the comparative coarseness of file cuts. Files are separated into three groups—saw and mill files, general purpose files, and miscellaneous files and rasps. Also shows Swiss file pattern styles. The red background of the chart makes the illustrations and tables stand out. A useful chart for most any kind of shop. Heller Brothers Company.

☐ **8. SAFETY SHOES** — This interesting little booklet discusses the menace of body static in a plant and features a new type of safety shoe that conducts the body static to the ground. The features and use of the shoe are presented in a concise question and answer form. International Shoe Company.

☐ **9. SEALING SHIPPING BOXES** — "How to Seal Corrugated Shipping Boxes" outlines the use of adhesives with gummed tape, metal staples and stitches, steel straps and wires for sealing particular types of corrugated boxes. Tips on the most efficient practice of these

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## Better filing with THE RIGHT FILE FOR THE JOB

- There's a fast and a slow—an efficient and an inefficient—way of doing everything. This is particularly true of filing.
- Nicholson Special Purpose Files are designed to speed filing work—produce better results—reduce rejects and wasted effort.
- “Speed it up!” is the industrial war cry. Take die castings. You can do a fair finishing job with an ordinary file. But you can do it heaps faster and more accurately with *The right file for the job.*
- Nicholson or Black Diamond special files for finishing die castings of aluminum-alloy and similar metals are made with extra-strong teeth on sides, edges and corners—to resist shelling off and breaking out. The design eliminates to a great extent the tendency of these metals to clog the file. Regularly made in Mill Bastard and Half Round Smooth. . . . And *Twelve perfect files in every dozen* are guaranteed! Obtainable through your mill-supply house.

**NICHOLSON FILE CO. • PROVIDENCE, R. I., U. S. A.**  
(Also Canadian Plant, Port Hope, Ont.)

- **FREE TECHNICAL BULLETINS** on Nicholson or Black Diamond Special Purpose Files for: Stainless Steel, Aluminum, Brass, Lead, Foundry Castings, Die Castings, Die Making, Plastics; Shear Tooth and Lathe filing. Name ones wanted.



# NICHOLSON FILES

FOR EVERY PURPOSE

**NICHOLSON  
U.S.A.**  
MADE IN U. S. A.

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methods make the booklet a valuable guide to conservation of materials and time, as well as produce more secure closures. The Hinde & Dauch Paper Company.

☐ **10. BALL BEARING HOUSINGS**—A very useful book for the machine designer this engineering publication "Details of Design of Shafts and Housings for Ball Bearings." Includes such subjects as proportions and finish of bearing seats, lock-nut threads, recommended shaft shoulders, designing to aid disassembly, locating and clamping methods and the use of adapter sleeves. Numerous other pertinent subjects are treated and each section is profusely illustrated with well executed line drawings. New Departure.

☐ **11. POWER DISTRIBUTION**—"Circuit Arrangements for Load-Center Power Distribution Systems" is an informative booklet designed to help the selection of the proper arrangement of this type of system to meet individual requirements. Described are the characteristics of the four load-center system basic circuit arrangements—the simple radial circuit, the primary selective circuit, the secondary selective circuit, and the secondary network arrangement. A useful book for electrical departments. General Electric.

☐ **12. SLEEVE INSULATION** — Folder has pinned to it 24 actual samples of sleeve insulation, from size 20 to 4. A complete list of sizes available are given on another page. For any one using sleeve insulation, this varied collection of "turbo" flexible tubing and saturated sleeving is very handy and useful. William Brand & Company.

☐ **13. INSULATION TESTING** — The "Pocket Manual of Megger Practice" is a comprehensive 128-page, pocket-size book giving complete information about the operation and use of the megger for testing electrical insulation. This very complete and informative book treats the principle of operation and the use of the megger for testing all types of electrical apparatus. Hundreds of photographs and drawings are shown to simplify the text. An indispensable book for any electrical maintenance department. James G. Biddle Company.

☐ **14. HOISTS** — A 28-page booklet features several models of hoists with low headroom. Book goes into explicit details on the correct method of ordering hoists, such as specifying the control, ceiling height, trolley speed, length of travel, minimum radius of curves, etc. Large photographs show the construction

details of the hoists and numerous applications. A helpful book for those using hoists or with materials handling problems that might be solved with a system of overhead hoists. American Engineering Company.

☐ **15. GEAR SHAPING** — A very informative 12-page book covering gear shaping and shaper cutters. Gives the fundamentals of gear design and a nomenclature of cutter terms. Contents includes correct tooth form, generating, mating of hobbed and shaped gears, root fillets, possible machine errors, accuracy required for shaper cutters, advantages of gear shaping, hints on cutter sharpening, and others. Large drawings illustrate the text. A very useful book for any one concerned with the making of gears or handling of shaper cutters. Michigan Tool Company.

☐ **16. CLEANING METAL PARTS**—Features several models of conveyor and revolving types of cleaning equipment for metal parts. Gives an informative discussion of the applications of both types of equipment and shows large photographs and drawings of the different models. A useful book for those with problems in cleaning metal parts. Colt Patent Fire Arms Mfg. Co.

☐ **17. BURRING** — A booklet titled "Burring with the Lea Method" discusses a method of finishing by the use of a greaseless buffing compound. The ability of this method of burring to remove undesirable sharp edges, jagged surfaces, etc., without destroying the surrounding areas is stressed. A 2-page chart lists a number of different grades of Lea compound and how it is used to treat products made of different materials. Detailed instructions are given for using this compound. The Lea Manufacturing Co.

☐ **18. VALVES**—A 4-page folder full of useful information about gate valves, giving the names of all the parts, the meaning of different valve terms, and showing how to increase the life of valves. Large photographs and drawings illus-

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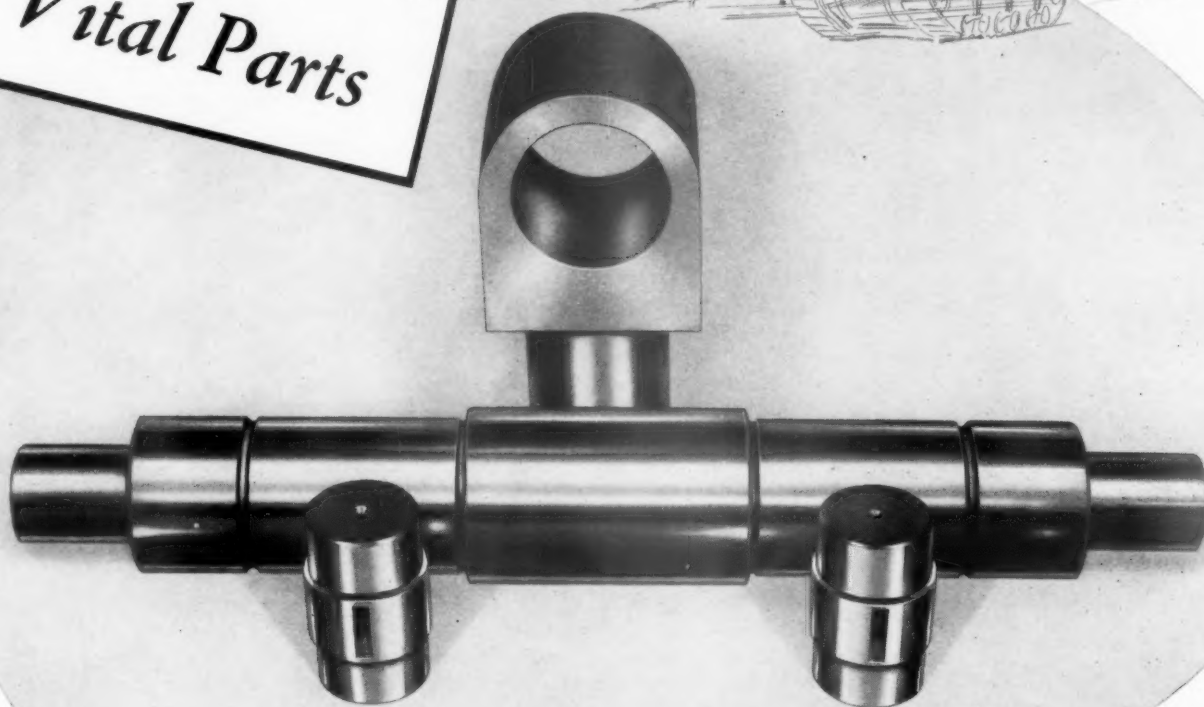
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*longer wear  
for  
Vital Parts*



## NITRALLOY STEELS

War equipment cannot be "babied". Every part must stand up under tough service. The wear resistance of the extremely hard surfaces obtainable with Nitralloy Steels protects vital parts. We are manufacturing Nitralloy Steels for every type of fighting equipment.

**COPPERWELD STEEL COMPANY • WARREN, OHIO**

**ARISTOLOY  
STEELS**

CARBON TOOL STEELS • ALLOY TOOL STEELS  
AIRCRAFT QUALITY STEELS • STAINLESS STEELS  
NITRALLOY STEELS • BEARING QUALITY STEELS

"THE WILL TO MAKE GOOD STEELS"

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trate the text. Several safety and salvage notes on valves are included. One page is devoted to the subject of valve simplification. Reading-Pratt & Cady Div., American Chain & Cable Company.

☐ **19. ROPE**—"Care Saves Rope" is a 16-page, pocket size book telling how to handle rope in order to get the maximum service from it. Many photographs and drawings illustrate the features discussed, show how to make splices, knots and slings, and how to rig a block and tackle. A very useful book for the rigger and maintenance man. American Manufacturing Company.

☐ **20. PLASTICS**—"A Ready Reference for Plastics" is a 54-page book giving a brief description of the commonly used plastics and their origin. This is a very useful reference book on the widely expanding field of plastics with numerous tables and data lists on many of these products. Included in the description are phenolic base compounds, urea base compounds, cellulose acetates, methyl-methacrylate resins, ethyl cellulose, cellulose acetate butyrate, styrene resins, vinyl resins, nylon resins and others. Chemical, physical properties and the available forms of each type are given. Boonton Molding Company.

☐ **21. ELECTRICAL CONTROL APPARATUS**—A comprehensive catalog and reference book containing a wealth of useful data on relays and other electrical control equipment. Includes complete data on over 30 types of relays and their mountings, stepping switches of various types and capacities, and a host of other electrical control parts such as switching keys, signal lamps, cords and plugs, and solenoids. American Automatic Electric Sales Co.

☐ **22. CONSERVATION**—An interesting booklet titled "The Conservation of Copper, Rubber, Zinc and Steel in Building Wiring Systems" discusses the annual consumption of these products and the percentage used in building wire and cable. The book shows how a great deal of insulating rubber can be conserved by using other insulations, eliminating certain types of wire and omitting insulation from neutral conductors. Useful information is also given about each of the other materials named in the title. National Electric Products Corp.

☐ **23. OVERNIGHT CEMENT**—This 16-page booklet may contain the answer to many a remodeling or expansion problem where concrete plays an important part. It features the properties and uses

of overnight cement on which full load can be used 24 hours after the cement has been placed. Charts compare the properties of "Lumnite" with those of ordinary cements. A detailed analysis is given of the method of preparing and using this product, the mixing proportions and the proper curing. The Atlas Lumnite Cement Co.

☐ **24. MANGANESE STEEL**—This 64-page book tells everything about manganese steel—what it is, how it is made and tested, its history, properties, heat treatment, machining and its numerous uses. Photographs show dozens of products made from this material and the facilities for its manufacture and test. Elongation charts and photomicrographs are likewise shown. A very complete book on this type of steel. American Manganese Steel Div. of the American Brake Shoe & Foundry Co.

☐ **25. TOOL HOLDERS**—An 8-page booklet featuring several useful types of spring tool holders, for forming, threading and cutting off. The holders are designed to eliminate chatter and breakage of cutters. The variety shown should meet most any tool holder requirement. Auto-Ordnance Corp.

☐ **26. PNEUMATIC SAFETY INSTALLATIONS**—"Horse Sense" is a 4-page folder featuring several types of pneumatic installations to provide safety to machine operators. Equipment shown includes adjustable blow guns, pneumatic pedals, couplings and fittings. Folder also shows how to equip power presses with pneumatic equipment to promote safety and increase production. Several illustrations are shown with each discussion. A. Schrader's Son.

☐ **27. HAND TOOL GUIDE**—This 11" x 12" book is an educational piece about the use of hand tools. Each page features a different tool and shows by drawings the proper name of each tool part, as well as how to correctly use the tool. Among the tools covered are cold chisels,

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## WAR PLANTS—LARGE AND SMALL—NEED THESE PROTECTORS!

HERE IS A NEW transparent plastic Protector for vital war-time blueprints and shop orders that is already proving itself—in action in the shop!

These tough, durable enclosures, made of ETHOCEL\* Sheeting and fabricated by Joshua Meier, Inc., New York City, protect papers and cards from grease and smudge—keep them clean and unmarred. No time is lost because of illegibility.

It is common practice in some shops for machinists to work from original drawings which are protected by these envelopes. Drawings remain clean and legible for later blue printing or filing. Other sizes of these ETHOCEL Sheeting Protectors are used for small drawings and shop orders.

Where durability and toughness are essential requirements, specify ETHOCEL Sheeting. It stands up in the midst of punishing shop action.

### ETHOCEL SHEETING IDEAL FOR MANY PRODUCTS

ETHOCEL Sheeting does not warp or crack—does not become brittle with age. It is readily fabricated by cementing, sewing, stapling or riveting—is easily heat formed—and printed. It is used for a wide variety of applications. Write to the Plastics Sales Division for details.

#### THE DOW CHEMICAL COMPANY MIDLAND, MICHIGAN

New York, St. Louis, Chicago, San Francisco, Los Angeles,  
Seattle, Houston

\*Trade Mark Reg. U. S. Pat. Off.



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all types of hammers, T-bevels, spoke shaves, scrapers, planes, gauges, hand drills, bit braces, screw drivers, hand saws and wood chisels. Two pages illustrate the different kinds of wood joints. A very informative guide. Note: The price of The Stanley Tool Guide is \$0.25. Please write direct to Stanley Tools, Div. of the Stanley Works, New Britain, Conn.

☐ **28. HOSE**—The "Hose Data Book" contains a wealth of useful information about all types of industrial hose. Sections include principal types of hose construction, suggestions for increasing service life, couplings and numerous tables and charts to aid in the proper selection of hose for various uses. Book is illustrated with numerous drawings and is particularly timely now when every bit of hose must be used to the utmost. A valuable book for maintenance and purchasing departments, as well as for the workman who takes care of the hose in a plant. New York Belting & Packing Co.

☐ **29. ALL ABOUT SPRINGS**—The "Manual of Spring Engineering" is a comprehensive book of 132-pages which covers nearly everything about spring engineering and design. It discusses such subjects as spring materials, fatigue char-

acteristics, temperature effects, static and dynamic loads, tolerances, deflections, stresses, working space, design factors and design formulas. The book is well illustrated with large photographs, drawings and contains special nomographic charts and numerous tables of engineering data. An indispensable book for any one designing or specifying springs for all types of uses. American Steel & Wire Company.

☐ **30. MACHINISTS' TOOLS**—The "Machinists' Tool and Measuring Book" is a 112-page, pocket size book listing micrometer calipers, gauges and accessories of all types. About 40-pages are devoted to useful data on measuring, showing how to use a rule, calipers, and dials on machine tools, and illustrating by diagram how these devices function. Several tables of useful engineering data are included. J. T. Slocomb Company.

☐ **31. PAINT**—"Paints for Victory" contains a comprehensive listing and description of many paint and varnish products being used in war production and construction, intended to serve as a complete and handy guide to purchasers of such materials. Contains complete descriptions of all principal Federal specification paints, varnishes and lacquers,

cantonment paints, camouflage paints and color chips showing the official colors in which these paints are used. Also lists the emergency specifications recently released by the Federal Specifications Board. O'Brien Varnish Company.

☐ **32. PORTABLE LATHE GRINDERS**—"Care and Operation of Portable Precision Lathe Grinders" is full of useful information about these devices. The book starts off with a brief history of grinding, and then goes into the application, selection, use and care of these grinding attachments. Numerous illustrations help explain the text. Contents covers such subjects as the selection of the quill, the proper wheel, importance of balance, safety precautions, elimination of chatter, and the dressing of the wheel. The Dumore Company.

☐ **33. FLATGUMMED PAPER**—Aptly termed the National Emergency Edition, this book shows the vast number of white and colored gummed papers still available. Numerous illustrations show how gummed paper can be used to advantage. Charts and helpful hints give the reader concise and accurate data. McLaurin-Jones Company.

☐ **34. DIAL INDICATORS**—Book describes a series of dial indicators designed for checking war materials. Included are gages for checking the bore and powder chamber of guns, pitch diameter of threads, caliper gages, snap gages, elongation gages and others. Large photographs and drawings are shown with each model, as well as full specifications. A very useful gage book for any one working on war equipment. Federal Products Corporation.

☐ **35. ROTARY PUMPS**—"10 Ways to Make Your Rotary Pumps Last Longer" is a 7" x 11" red, white and blue card suitable for mounting near rotary pump installations. It lists by drawing and short text 10 suggestions to make pumps last longer. Its concise and easily read contents makes it very suitable for use in the plant. Blackmer Pump Company.

**PURCHASING** 205 EAST 42ND ST., NEW YORK, N. Y.

Please send me the "Know-How" Information checked.

28 ☐ 29 ☐ 30 ☐ 31 ☐ 32 ☐ 33 ☐ 34 ☐ 35 ☐

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

7/42

JULY, 1942

# SKILSAW TOOLS

HELP WAR-BUSY HANDS  
GET MORE DONE

*faster!*

EVERY MINUTE COUNTS

● America wants more speed in production . . . and *fast* SKILSAW TOOLS give every hand more productive power. America wants fewer work interruptions . . . and *dependable* SKILSAW TOOLS keep every hand on the job. It's no accident that SKILSAW TOOLS are at the front in the battle of production—America's busiest war-work plants use them to cut days from schedules, to pack more vital work into every hour that brings us closer to Victory!

If you have problems of production speed (and who hasn't?) ask your distributor to show you, in your own plant, on your own work, how SKILSAW TOOLS can help you.

## SKILSAW, INC.

4761 Winnemac Avenue, Chicago

New York • Boston • Buffalo • Philadelphia • Cleveland • Detroit  
Indianapolis • St. Louis • Kansas City • Atlanta • New Orleans  
Dallas • Los Angeles • Oakland • Seattle • Toronto, Canada

## ABOUT DELIVERIES

Your distributor  
can deliver most  
SKILSAW TOOLS  
from stock or ship  
promptly from  
factory . . . for all  
war-production needs

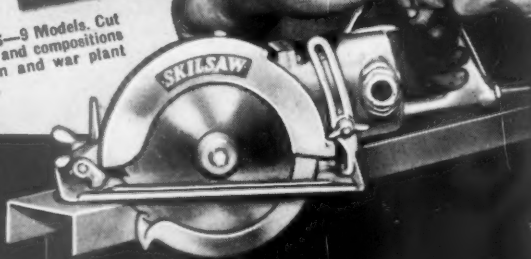
• SKILSAW DRILLS—23 Models. For fastest production drilling. Capacities from 1/4 in. to 3/4 in. in steel.

• SKILSAW DISC SANDERS—6 Models. Grind, file, sand and polish on all flat or curved surfaces.

• SKILSAWS—9 Models. Cut metals, wood and compositions in production and war plant construction.

# SKILSAW PORTABLE ELECTRIC TOOLS

★ MAKE AMERICA'S HANDS MORE PRODUCTIVE ★



When writing Skilsaw, Inc. please mention Purchasing





# HOW AND WHY

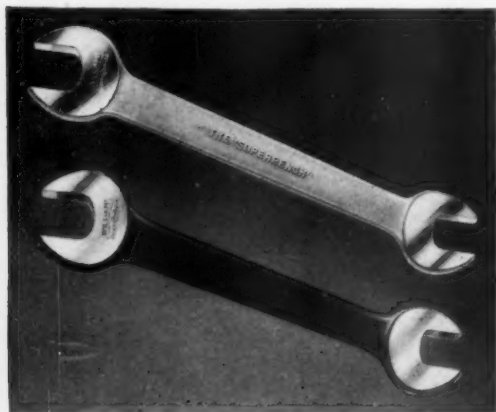
## WILLIAMS' TOOLS AID WAR PRODUCTION

J. H. WILLIAMS & CO., Drop-Forgings and Drop-Forged Tools, BUFFALO, N. Y.

### WILLIAMS' "SUPERIOR" (CARBON STEEL) WRENCHES

For some years previous to the war, the popular trend was toward replacement of this type of wrench with alloy steel tools which usually were chrome-plated and more highly finished. Today, however, material shortages and the need for critical economy makes a close examination of the relative merits of carbon and alloy steel wrenches particularly timely. Since we manufacture *both* types, we can present the following facts and figures without bias or prejudice.

Williams' "Superior" Wrenches are forged from carbon steel, specially processed to exacting specifications. These wrenches have been improved to a point where they are substantially twice as strong as the earlier carbon steel wrenches of our own manufacture. Comparative tests demonstrate that they average (throughout all patterns and sizes) 93% as strong as our corresponding alloy steel wrenches. In the popular Double-Head Engineers' pattern,



Comparison of Double-Head Engineers' Pattern of Alloy (top) and Carbon Steel wrenches. Both wrenches have same openings.



Comparative strength tests were made in Williams' Laboratory with every size and type in the carbon and alloy steel wrench lines.

"Superior" (carbon steel) Wrenches are *actually stronger* than the corresponding sizes of alloy wrenches which are of thinner design. Other patterns in the Williams' line are forged from identical dies whether of carbon or alloy steel—thus the *average* shows a slight strength advantage in favor of alloy steel.

Against this slight advantage are the following practical considerations: Alloy steel wrenches cost nearly twice as much as "Superiors"; critical alloys are needed in many items of war production where substitution is highly undesirable; in the Double Head Engineers' pattern, the thicker design of "Superior" Wrenches affords a more comfortable hand grip and a better bearing on the nut; the usual finish supplied on "Superior" Wrenches involves no critical material (such as chrome), since they are finished in baked-on enamel rather than plating.

#### Economize with Carbon Steel Wrenches

In view of today's conditions, we strongly recommend the use of "Superior" (carbon steel) Wrenches wherever possible. In most industrial applications, any advantage in alloy wrenches is negligible. Some types of close-quarters work require thinner heads available in the Double Head Engineers' pattern of alloy wrenches, thus justifying their higher cost.

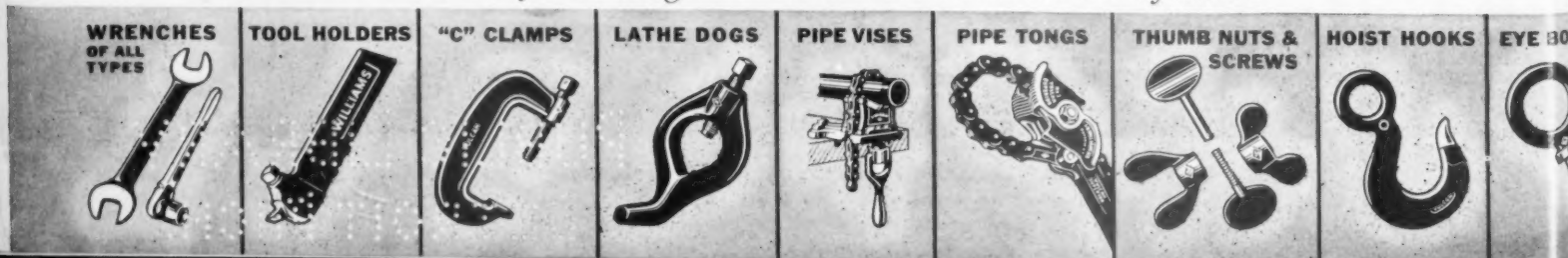
An informative booklet, providing comprehensive data on standard wrench types is available without charge. Write for "How to Select and Use Wrenches."

# WILLIAMS

SUPERIOR DROP-FORGED TOOLS

Headquarters  
for over half a century for  
DROP-FORGINGS and DROP-FORGED TOOLS

Sold by Leading Industrial Distributors Everywhere



# "Easier to Use"



## MIDWEST BUTT-WELDING ELBOWS

Welders who have worked on all kinds of piping jobs frequently report that Midwest Welding Elbows are "easier to use" . . . this means an all important saving in time. Layout time is saved because all pipe can be cut in advance according to the drawings . . . time for lining up and tack welding is also reduced.

Midwest Butt-Welding Elbows are "easier to use" because of their greater dimensional accuracy and consistent uniformity. These qualities are inherent in Midwest Elbows because of their unique method of manufacture: they are sized in compression (not extruded or stretched) and an exact in-

cluded angle is the result of special fixtures and tools developed by Midwest for machine-beveling the ends.

Bulletin WF-41 shows the other advantages of Midwest Elbows . . . and the complete line of Midwest Welding Fittings. Write for a copy.

### MIDWEST PIPING & SUPPLY COMPANY, Inc.

Main Office: 1450 So. Second St., St. Louis, Mo.  
Plants: St. Louis, Passaic (N. J.) and Los Angeles

Sales Offices: Chicago—949 Marquette Bldg. • Houston—229 Shell Bldg.  
Los Angeles—520 Anderson St. • New York—(Eastern Division)  
30 Church St. • San Francisco—535 Call Bldg. • Tulsa—533 Mayo Bldg.



MIDWEST WELDING FITTINGS SAVE TIME, IMPROVE THE DESIGN, AND REDUCE THE COST OF PIPING SYSTEMS

When writing Midwest Piping & Supply Company, Inc., please mention Purchasing



**"THIS SHIP WAS NEVER BUILT!"**



The billion and a half man-hours lost last year through work accidents were sufficient to build: 44 battleships, 375 destroyers or 450 submarines.  
\*From figures issued by official sources

**HEAT-FAG** is directly responsible for many Accidents  
**STOP THIS COSTLY TOLL!**

The finger of Accident is always beckoning to the fatigued, inalert worker. That's why Heat-Fag, ever-present when men sweat, takes such a staggering toll in man-hours lost to industry. For, body salt lost by sweating must be replaced or Heat-Fag sets in. Lowered efficiency, fatigue and discomfort follow . . . workers become careless . . . accidents happen . . . priceless man-hours are sacrificed.

**AVOID HEAT-FAG . . . USE**  
**MORTON'S SALT TABLETS**



**QUICK DISSOLVING**  
(less than 30 seconds)  
This is how a Morton Salt Tablet looks when magnified. Examine one—see how soft and porous it is inside. When swallowed whole—with a drink of water, they dissolve in less than 30 sec.

**ORDER NOW!**

Order from your distributor — or directly from this advertisement.

Case of 9000 Salt Tablets **\$260**  
Salt-Dextrose Tablets **\$315**  
Case of 9000

**DISPENSERS**

500-tablet size . . **\$3.25**  
1000-tablet size . . **\$4.00**



**FREE Sample Tube**

Write — on your firm letterhead — for a pocket size sample tube of Morton's Salt Tablets and for the new folder — "Heat-Fag and Accidents Ride Together."

**MORTON SALT CO., Chicago, Illinois**

**EVERYONE WHO SWEATS NEEDS SALT**



# F.O.B.

## *Philosophy of buying*

**P**URCHASING agents are practical men. We present in evidence this note from Henry Coates, P. A. of the Dairymen's League Coop. Assn.:

"I am pleased to note that the poster of Uncle Sam on the cover of your May issue has the anvil facing the correct way. It is surprising that most pictures of smiths with their anvils have the horn pointing to their left instead of the right, a position impossible to use by the smith."

Claiming no credit for the art work in this highly effective poster, which was used on PURCHASING's cover through courtesy of the International Paper Co., we are gratified indeed for this reassurance that Uncle Sam is in a position to carry out his slogan, "United, we forge ahead!"

**A**CCORDING to the orthodox economists, rising prices are one of the forces which bring out increased production. According to Arkansas State Purchasing Agent J. E. Victor, interviewed by the Little Rock Democrat, ceiling prices are the potent force to bring out upon the market many products and commodities which have been considered scarce. It is his belief that stocks had been held back in anticipation of further price increases, and since price ceilings have put an end to that possibility the goods are being offered for sale. At any rate, a good many items which were difficult to locate a few months ago are now being offered in increasing quantities, which is good news to the buyer.

Those familiar initials OPM are back again. This time the reference is to the Office of Procurement and Material in the Navy Department.

**A**DD to the functions of the purchasing department: the responsibility for worrying. In

Springfield, Mass., where municipal purchasing was centralized two years ago, the Police Commissioner aired his troubles concerning the high cost of uniforms and the specifications for a new police ambulance, but got scant sympathy from the press, which pointed out that the purchasing ordinance was presumed to have relieved him of the purchasing responsibility he was complaining about. Summing up an editorial on the subject, the *News* declares: "Worries over the buying of clothes for the patrolmen and the police ambulance really belong exclusively to the Purchasing Agent."



**E**VEN time-honored trade names fall victim to the war emergency. For more than forty years, a particularly sturdy type of locomotive has been known as the "Mikado" and has carried the distinguishing mark "MK" upon its side. Since Pearl Harbor that hasn't looked so good to railroad men. Therefore, at the instance of the Central of Georgia R. R., it has been rechristened the "MacArthur" and painters are busy in scores of yards stencilling "MacA" where the "MK" used to be.

**W**E still run across occasional examples of that very fallacious method of calculating purchasing department "savings" by figuring the difference between the high bid and the low bid which gets the award. Such is the report from the City of Springfield, Mo., for the



second half of May, showing "savings" of \$166.13 to the city by the application of this formula. The point is driven home by citing the Purchasing Agent's salary of \$100.60, and claiming a "net economy" of \$65.53.

**I**NFINITELY more constructive is the annual report of City Purchasing Agent H. F. Wagner of Cincinnati, which arrived in the same mail. Accomplishments referred to in this report included:

Conscientious stewardship of the citizens' tax dollar.

Conference with OPM and assisting in formulation of the blanket rating plan for essential maintenance supplies.

Bulletins to city departments exhorting them to anticipate their requirements, not for the purpose of hoarding, but to safeguard civilian security.

Work with all departments to work out suitable substitutes where necessary, forewarning them of impending shortages, and assisting them to protect themselves against price increases and depleted stocks.

Coverage on hospital and garage supplies to maintain services in the public interest.

Extension of fire and water services, anticipating the designation of the city as a Defense Area.

Change to factory standard equipment from some "tailor made" specifications; interdepartmental sales of used equipment instead of using it as trade-in.

Salvaging of all types of waste materials. Contact with other cities to compare methods. Sales of scrap and obsolete equipment amounted to \$42,816.46.

Retrenchment in issuance of supplies from central Stores Division. "Departments have been urged to economize, particularly in those items where a scarcity is evidenced. We have started our own system of allocation, and the requirements of the various departments have been studied."

Operation of a self-supporting division of reproduction services, invoicing departments on a cost-plus basis, and turning in a surplus of \$761.75.

Work with the voluntary Coordinating Committee of Purchasing Agents of Hamilton County, a clearing house for setting up specifications on items in common use, and for the joint award of contracts.

The statistical section of this report is relatively a minor consideration, but the evidence is nevertheless more convincing than a bald financial statement. Purchasing service and purchasing efficiency can not be measured in terms of dollars and cents.



**T**O keep the enemy on the run, it is imperative that we keep our fighting forces supplied with all necessary equipment. Enormous quantities of steel are required for guns, planes, tanks, ships and shells. The more service you can get out of your wire ropes, the more steel you save for these other vital purposes . . . so, the longer you can keep your ropes running, the faster will be the flight of the foe.

Whether or not a wire rope gives the full service of which it is actually capable, depends largely upon the conditions under which it is required to work—unfavorable or improper conditions mean shorter life; to save steel, give your ropes the same kind of a chance you are now giving your tires.

Another important factor in getting maximum service from wire rope is the use of the correct grade, construction and type. On all problems of this kind, feel free to consult our experienced Engineering Department.

For the benefit of all wire rope users we have published a 44 page illustrated booklet entitled, "Practical Information on the Use and Care of Wire Rope." It contains information that will help all wire rope users get more "Work hours" from every pound of their wire rope steel. We shall be glad to supply a complimentary copy upon request.

<b>A. LESCHEN &amp; SONS ROPE CO.</b>			
WIRE ROPE MAKERS			
5909 KENNERLY AVENUE			
NEW YORK		90 West Street	
CHICAGO	810 W. Washington Blvd.	SAN FRANCISCO	520 Fourth Street
DENVER	1554 Wazee Street	PORTLAND	914 N. W. 14th Avenue
		SEATTLE	2410 First Avenue South

ESTABLISHED 1857  
ST. LOUIS, MISSOURI, U. S. A.

When writing A. Leschen & Sons Rope Co. please mention Purchasing



## TO PLANT SUPTS.

This is one of a series of ads addressed primarily to new grinder hands. If you would like additional copies without our signature, for your bulletin board, tell us how many you need.

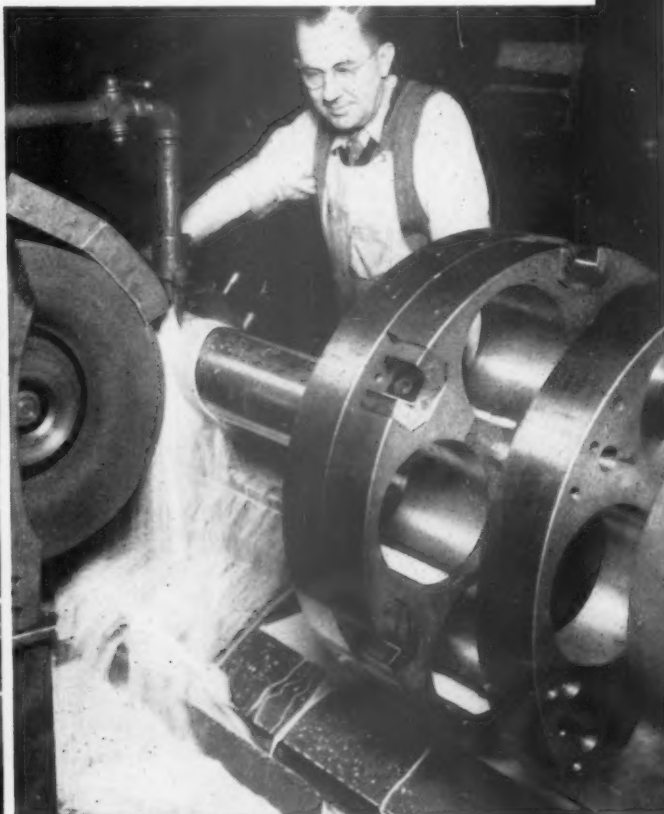
### How to get better and longer service from your grinding wheels...

● The war imposes a double task on industry and a patriotic responsibility on grinder hands. Speed of production has to be increased, without waste of basic materials. With grinding playing such an important part in production, these simple rules may help you do your job better!



#### 1 USE THE RIGHT WHEEL IN THE RIGHT PLACE

Given data on the type of grinding job, the character of metal to be ground, the amount of stock to be removed and the finish desired, a grinding wheel manufacturer can give you a wheel in the right grit, grade, grain, bond, shape and size to meet definitely your grinding conditions—a wheel that will last longer, do better work at reduced grinding costs. And sales engineering service will help you to select the right wheel for every job.



#### 2 MAKE SURE YOUR GRINDING SET-UP IS RIGHT ON EVERY JOB

Manufacturer's recommendations should be carefully followed on wheel speed, work speed, proper coolant, wheel traverse, rate of infeed etc. Only the correct balance of these factors gives you the full advantage of properly specified wheels. One of the services performed by grinding wheel sales engineers is to check your grinding conditions on the job and point out the best method of carrying out the grinding operation.

**THE CARBORUNDUM COMPANY • NIAGARA FALLS, N. Y.**

REG. U. S. PAT. OFF.

(Carborundum is a registered trade-mark of and indicates manufacture by The Carborundum Company)

*When writing Carborundum Co. please mention Purchasing*

Some time you will change to

# MO-MAX

## HIGH SPEED STEEL

*Why not now?*



It is believed that **MO-MAX** is now in the best strategic position of all high speed steels • Its moly is produced within our borders • So is the less than 2% of tungsten required • The vanadium is only 1%, the lowest in any commercial high speed steel • Its economy is outstanding • Its cutting quality is 20% better than 18-4-1 • It has been commercially established for more than nine years • Change now to the ultimate high speed steel • Fourteen high speed steel makers manufacture brands of **MO-MAX** and make it readily available.

*For Technical Data Booklet*

Write any of the steel makers listed or to The Cleveland Twist Drill Co., Cleveland, Ohio.



**LMW**  
Alleghany Ludlum Steel Co.

**MOHICAN**  
Atlas Steels, Ltd.

**BETHLEHEM HM**  
Bethlehem Steel Company

**MO-CUT**  
Braeburn Alloy Steel Corp.

**STAR MAX**  
Carpenter Steel Co.

**MOLITE 8**  
Columbia Tool Steel Company

**REX TMO**  
Crucible Steel Co. of America

**DI-MOL**  
Henry Disston & Sons, Inc.

**REX TMO**  
Halcomb Steel Division  
Crucible Steel Co. of America

**MOGUL**  
Jessop Steel Company

**TATMO**  
Latrobe Electric Steel Co.

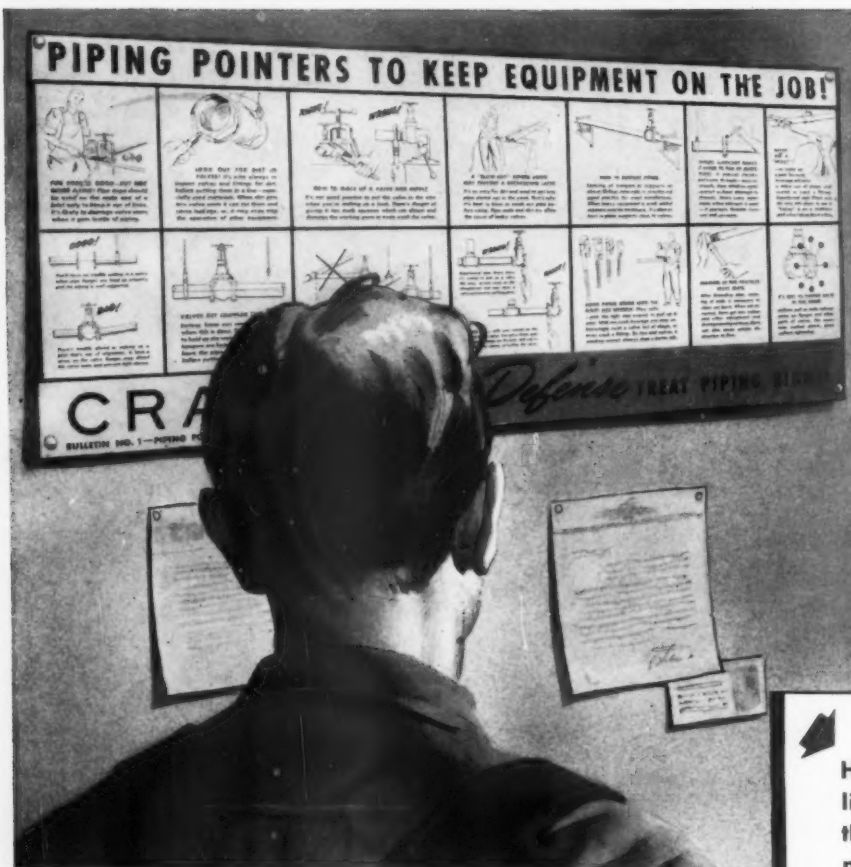
**S.T.M.**  
Simonds Saw and Steel Co.

**MO-TUNG**  
Universal-Cyclops Steel Corp.

**VUL-MO**  
Vulcan Crucible Steel Co.

When writing Cleveland Twist Drill Co. please mention Purchasing





He's a fighting fool  
give him the best you've got



**MORE PRODUCTION**

## Helpful Hints for Promise-Beaters

He'll work his head off in the plant to lick the Japs and Jerries. But he—and thousands of his brothers in industry—need help in keeping your plant fit for today's triple-shift production job. To provide that help—for him and for YOU—Crane Co., many months ago—established a vital new service for American industry . . . the Crane "Piping Pointers" shop bulletins.



**KNOWING HOW** to choose the right valve for a particular service may make all the difference between smooth-flowing production and a costly interruption. "Piping Pointers" give practical hints on valve selection—hints that prevent many piping troubles—*keep equipment on the job!*



**WRENCHES CAN BE DEADLY** enemies of production if wrongly used. Because piping equipment must *stay* on the job today—because replacements waste time—waste critical metals—these Crane shop bulletins are showing maintenance crews in thousands of plants how to care for valves.



**TRAINING NEW MEN** for piping maintenance—helping veterans to "*brush up*" on modern methods—is one of the jobs Crane "Piping Pointers" are doing. Subjects range from how to open and close valves to how to prevent water hammer—all adding up to better piping, more production!

★ OFFERED FREE AS AN AID TO VICTORY—"Piping Pointers" are available *free*—on request—from your local Crane Representative—or by writing to the address given here.

# CRANE

CRANE CO., GENERAL OFFICES: 836 SOUTH MICHIGAN AVENUE, CHICAGO  
VALVES • FITTINGS • PIPE • PLUMBING • HEATING • PUMPS

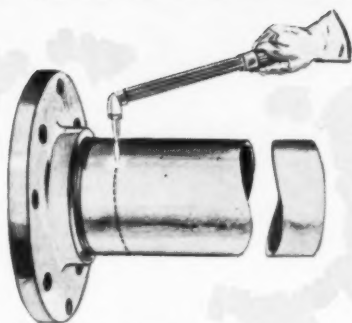
NATION-WIDE SERVICE THROUGH BRANCHES AND WHOLESALERS IN ALL MARKETS

*When writing Crane Co. please mention Purchasing*

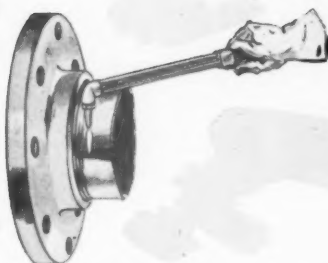
# SALVAGE THAT PIPE FLANGE!

Today reclaimable materials *must* be reclaimed and restored to use. Screwed flanges and other types of screwed fittings can be removed from pipe. If they can't be unscrewed, cut off the pipe within a few inches of the fitting or flange. Split the remaining pipe; then collapse it by hammer blows, vise, pneumatic hammer or press to free it from the flange or fitting.

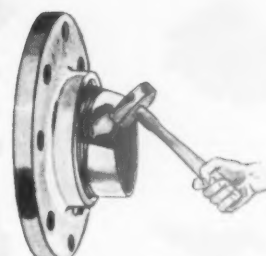
Thoroughly clean the threads of flanges and fittings thus reclaimed before reusing. Use a fine wire brush. Some fitting threads may not have been in contact with the threads of the pipe, resulting in the accumulation of corrosion or foreign matter which can be removed with hand tools.



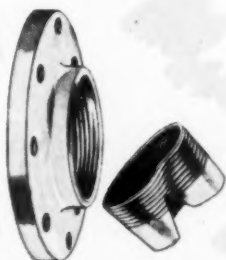
1 Cut pipe near flange.



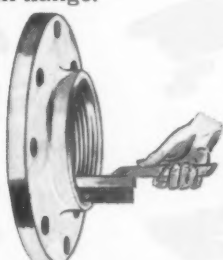
2 Cut "V" shaped notch in pipe remaining in flange.



3 Collapse pipe with hammer blows, as shown.



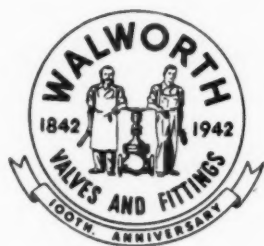
4 Pipe falls out of flange leaving flange threads unharmed.



5 Clean threads thoroughly.



6 O.K. for reuse.



## THIS IS OUR CENTENNIAL YEAR

This advertisement is one of a series prepared by Walworth in cooperation with the national program of Salvage, Simplification, Specification and Substitution. It is offered in a sincere effort to be helpful to users of valves, fittings, flanges and pipe.

We would like you to remember that this is our 100th Anniversary year and that Walworth has continuously manufactured valves and fittings for a century!

**ANOTHER PIECE  
OF VITAL WAR MATERIAL  
SALVAGED**

# WALWORTH

WALWORTH COMPANY  
60 EAST 42nd STREET, NEW YORK

**VALVES  
FITTINGS  
and TOOLS**

Backed by 100  
Years' Service

DISTRIBUTORS IN PRINCIPAL  
CENTERS THROUGHOUT THE WORLD



plain cooking in Peacetime

## but romantic in War...

Wire rope is like plain cooking until war reveals the vital part it plays in every heavy industry. It helps do the grunt-and-sweat jobs of production, and in America we have always taken production for granted. Only now do we realize how our production as a nation is helping our own nation and aiding our allies. Fortunately, all American manufacturers of wire rope make Preformed Wire Rope. This is helping immensely, for Preformed gives longer service, therefore speeds production. It also makes the same amount of steel go farther, through giving longer wear, thereby saving steel for other war uses . . . Regular wire rope for the stand-still jobs, Preformed for the harder jobs of action and hard wear.

**Preformed wire rope**  
*for America's Production*

ASK YOUR OWN WIRE ROPE MANUFACTURER OR SUPPLIER



# NEED MOTORS FOR WAR WORK?

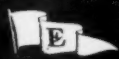
**4 Things to do to get them quicker**

**YOUR AID ON THESE 4 POINTS  
WILL HELP US PRODUCE AND  
DELIVER MORE MOTORS**



Tri-Clad motors are available in a full range of sizes from 1 to 100 hp. Your General Electric representative can supply complete information and help you get the Tri-Clad motor to do your job. General Electric, Schenectady, N. Y.

Your choice of G-E Tri-Clad motors will give you extra protection against (1) physical damage, (2) electrical breakdown, (3) operating wear.



General Electric and its employees are proud of the Navy award of Excellence made to its Erie Works for the manufacture of naval ordnance.

**SPECIFY TRI-CLAD MOTORS**

**GENERAL ELECTRIC**

## Use standard, open, sleeve-bearing motors whenever possible

The standard Tri-Clad motor, though classed as an "open" motor, is so well protected that it gives good service on many jobs where special motors often were recommended.

Sleeve-bearing motors often can be supplied more readily than ball-bearing types because of the present demand for ball bearings on other war equip-

ment. Use ball-bearing motors only where load or mounting conditions require them. Special end shields and other modifications may result in delay for you and others.

Consider the use of standard or multispeed a-c motors in place of d-c motors wherever this alternative is possible.



## order motors early . . . giving complete specifications

Place motor orders when you order the machines they are to drive.

If you are planning motor drives for conveyors or other equipment for new plants, place the orders as soon as design

work indicates the motor requirements.

Avoid delay and mix-ups by giving complete specifications, preferably on an order form which your G-E motor representative can supply.



## give complete priority information, properly endorsed

The filling of many motor orders is delayed because of incomplete priority information. If in doubt about details, call the nearest G-E office.

When placing orders for motors, be sure that complete priority data accompanies *each* order in the form of certificates, endorsements properly signed, etc. The priority is not effective in scheduling shipment until it is received by your supplier.

Your needs and the war effort are best served by using the proper priority rating assigned by the War Production Board for the job involved, and requesting delivery no earlier than actually required.

Under the Production Requirements Plan, builders of motor-equipped machines for subsequent sale may order their requirements in advance.



## check with G.E. for delivery from local warehouse stocks

To meet urgent war needs, a supply of standard Tri-Clad motors is maintained at G-E factories and local G-E warehouses. Perhaps the motor you want, or can use with a few

simple changes, is available for immediate shipment.

Your local G-E motor representative can furnish information on motors which may be in stock in the following cities:

Atlanta, Ga.  
Boston, Mass.  
Buffalo, N. Y.  
Charleston, S. C.  
Chicago, Ill.  
Cincinnati, Ohio  
Cleveland, Ohio  
Dallas, Texas  
Davenport, Iowa  
Denver, Colo.  
Detroit, Mich.  
Houston, Texas  
Kansas City, Mo.  
Los Angeles, Calif.  
Milwaukee, Wis.  
Minneapolis, Minn.  
New York, N. Y.

Oklahoma City, Okla.  
Omaha, Neb.  
Philadelphia, Pa.  
Pittsburgh, Pa.  
Portland, Ore.  
St. Louis, Mo.  
Salt Lake City, Utah  
San Francisco, Calif.  
Seattle, Wash.



ANOTHER JOB FOR

TUF-FLEX

*The Glass with the Iron Constitution*

IN ONE OF AMERICA'S great electric companies they're making searchlights of 800,000,000 candle power. That's as much candle power in one searchlight as is required to floodlight four major league ball parks, or illuminate twenty thousand homes!

This terrific energy, concentrated within a diameter of sixty inches, is enclosed behind a face of glass . . . a shield that permits the powerful finger of light to split the night sky, come fair weather or foul.

It takes a glass with an iron constitution to do this job . . . *another* job for Libbey-Owens-Ford TUF-FLEX Heat Tempered Plate Glass!

The ability of TUF-FLEX to stand up under the extreme temperature differences imposed on the two faces of this glass is a practical demonstration of its unusual strength and resistance to thermal shock. Compared with ordinary plate glass, TUF-FLEX is three times more

resistant to thermal shock, three times more flexible, and five to seven times stronger. And it's a safer glass, too, for when TUF-FLEX is fractured, it literally disintegrates into relatively harmless small crystals.

#### Flat Glass May Answer Your Problem

TUF-FLEX is only one of many modern L·O·F flat glass products which today are opening up entirely new fields for the practical use of glass. Many manufacturers, pinched by the shortage of critical materials, have been able to continue their production through use of an L·O·F glass.

Make sure that your company's production officials and designers are fully aware of the many types of glass that L·O·F research has perfected. Here may be the answer to your product problem. The facilities of our company are at your service. Libbey-Owens-Ford Glass Company, 1369 Nicholas Building, Toledo, Ohio.



LIBBEY·OWENS·FORD

QUALITY *Flat Glass* PRODUCTS

*When writing Libbey-Owens-Ford Glass Company please mention Purchasing*



## ARE YOU A CONVERT?

Nearly everybody is, these days, with America switching from peacetime to wartime effort. New products—new machines—new tools—and everybody running at top speed to make conversions.

If you are making up new dies or tools or production parts which require resistance to abrasion or wear, we invite you to try Graphitic Steel. It will machine 25% faster than any other tool steel you ever used—and it will wear longer.

**THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO**  
Steel and Tube Division

**Graphitic Steel**  
... will speed your  
war production for  
**VICTORY** and help you  
to profitably buck  
post-war com-  
petition.

Manufacturers of Timken Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; Timken Alloy Steels and Carbon and Alloy Seamless Tubing; and Timken Rock Bits.

**TIMKEN**  
TRADE-MARK REG. U. S. PAT. OFF.  
**GRAPHITIC STEELS**

*When writing The Timken Roller Bearing Company please mention Purchasing*







***Firth-Sterling***

**ANNOUNCES**

**ANOTHER SUBSTANTIAL REDUCTION  
IN FIRTHITE TUNGSTEN-TITANIUM  
CARBIDE PRICES**

**SINTERED  
TUNGSTEN  TITANIUM  
CARBIDE  
FOR STEEL CUTTING**



**T**HE established Firthite policy has been not only to improve the quality of its products but also to lower the cost to the ultimate user.

Here is the most recent example—a real step forward that is still further extending the use of sintered carbides for STEEL CUTTING.

**QUALITY IMPROVED**—After many years of research on the addition of Titanium to sintered carbides, we offer certain grades of Tungsten-Titanium Carbides that set new performance standards in the machining of steel.

**PRICES LOWERED**—The wider use of Firthite Tungsten-Titanium Carbides in

the TA, T-04, and T-16 Grades has resulted in lower processing costs. TITANIUM, itself, costs less than other ingredients. It is abundantly available from domestic sources. The more of it we use, the less dependent we are on imports of scarce metallic ingredients from foreign countries.

**NEW METHOD OF PRICING**—Heretofore, in pricing sintered carbides, differences in manufacturing costs have not been recognized. In our new method of pricing, we take into account the foregoing economies—and pass them on to you. (We believe that we are the first in the industry to do this.)

#### TUNGSTEN-TITANIUM CARBIDE GRADES

##### PRICES ARE REDUCED ON:

##### GRADE T-04

Closest approach to a universal grade. Especially recommended for heavy duty, interrupted cuts, coarse feeds, etc.

##### GRADE TA

General-purpose material for cutting steel—cast, rolled, and forged. Light, intermittent cuts.

##### GRADE T-16

For light, rapid finishing of harder steels.

##### ABOVE PRICE CHANGES DO NOT APPLY ON:

##### GRADE T-89

##### GRADE T-90

These are Tantalum\* - Titanium - Tungsten Carbide grades, and are sold for some steel-cutting applications.

\*Tantalum is now on the "allocated" scarce materials list.

#### FOR LATEST PRICES, SEE THESE NEW BULLETINS:



# *Firth-Sterling*

**STEEL COMPANY**

OFFICES: McKeesport, Pa. NEW YORK HARTFORD LOS ANGELES CLEVELAND CHICAGO PHILADELPHIA DAYTON DETROIT



## FASTER DRIVING • LESS EFFORT • BETTER WORK

### = 50% LESS ASSEMBLY COST WITH PHILLIPS SCREWS

It seems reasonable to expect more production and better work from a man who doesn't have to sweat and strain (and curse) in order to drive a screw.

Plants which have switched over to Phillips Recessed Head Screws do find that quantity and quality both respond nicely to the change. The Phillips Screw clings to the driver, transmits driving power more efficiently, prevents screw-

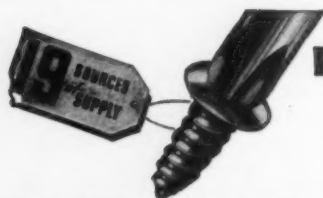
driver slippage, drives straight automatically and doesn't chew up when you start to drive it home. On top of that, it is more often practical to use electric or pneumatic drivers.

With so many nuisances and strength-wasters eliminated, operators do better work, even in awkward positions or even if inexperienced. Where accuracy is important, it is easier for them to line the

job up right — seat the screws securely — and avoid costly rejects.

So keep your men cool as cucumbers with Phillips. Meanwhile, you'll be pleased as Punch to find that assembly costs are cut in half as a result of Phillips Screws.

Any of the Phillips Recessed Head Screw manufacturers listed below can furnish screws and facts.



## PHILLIPS RECESSED HEAD SCREWS

GIVE YOU *2 for 1* (SPEED AT LOWER COST)

WOOD SCREWS • MACHINE SCREWS • SHEET METAL SCREWS • STOVE BOLTS • SPECIAL THREAD-CUTTING SCREWS • SCREWS WITH LOCK WASHERS

American Screw Co., Providence, R. I.  
The Bristol Co., Waterbury, Conn.  
Central Screw Co., Chicago, Ill.  
Chandler Products Corp., Cleveland, Ohio  
Continental Screw Co., New Bedford, Mass.  
The Corbin Screw Corp., New Britain, Conn.

International Screw Co., Detroit, Mich.  
The Lamson & Sessions Co., Cleveland, Ohio  
The National Screw & Mfg. Co., Cleveland, Ohio  
New England Screw Co., Keene, N. H.  
The Charles Parker Co., Meriden, Conn.  
Parker-Kalen Corp., New York, N. Y.  
Pawtucket Screw Co., Pawtucket, R. I.

Pheoli Manufacturing Co., Chicago, Ill.  
Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.  
Scovill Manufacturing Co., Waterbury, Conn.  
Shakeproof Inc., Chicago, Ill.  
The Southington Hardware Mfg. Co., Southington, Conn.  
Whitney Screw Corp., Nashua, N. H.

*When writing Phillips Screw Manufacturers please mention Purchasing*



# INSTALLING FLUORESCENT?

**You can get superior performance  
with G-E TULAMP ballasts  
... savings, too**

**B**ECAUSE they greatly reduce the stroboscopic effect (flicker) of fluorescent lamps, G-E Tulamp ballasts materially improve the performance of fluorescent-lighting installations. And, because all Tulamp ballasts provide high power factor—95 per cent or above—you get savings in installation cost and operating costs, in comparison with uncorrected-power-factor installations.

1. Wiring costs are less, because almost twice as many lamps can be supplied from the same sized feeder. This means conservation of copper, too.

2. Ballast electrical losses are reduced materially, which means savings in operating costs.

A G-E Tulamp ballast costs less than two high-power-factor single-lamp ballasts and only slightly more than two uncorrected-power-factor ballasts. Because of their performance and economy, G-E Tulamp ballasts are by far the most widely used ballasts for industrial and commercial applications. It will pay you to specify them for your installations.

Valuable information on ballast installation and operation, together with a complete listing of G-E ballasts for all applications, is included in our bulletin, GEA-3293C, "Ballasts for MAZDA F Lamps." Ask your retail or wholesale supply house for a copy or write direct to General Electric Company, Schenectady, New York.



General Electric and its employees are proud of the Navy award of Excellence made to its Erie Works for the manufacture of naval ordnance.

**GENERAL  ELECTRIC**

408-5-5206

*When writing General Electric Company please mention Purchasing*

# BOOST "MACHINE MORALE"

The best of machine tools become better ones — do more work, with greater precision, with fewer stops — when equipped with highest quality cutting tools.



# MORSE

THERE IS A  
DIFFERENCE

**TWIST DRILL AND  
MACHINE COMPANY**  
NEW BEDFORD, MASS., U. S. A.

NEW YORK STORE: 130 LAFAYETTE ST. - - - CHICAGO STORE: 570 WEST RANDOLPH ST.

*When writing Morse Twist Drill and Machine Company please mention Purchasing*

# The BIG BOYS you tuck away and safely forget...



Some ball bearings are destined to live alone. Buried in an almost inaccessible gear box or housing they must perform under severest operating conditions for the life of the equipment. Their failure means a major "tearing-down" job. That's why you need a quality standard which allows the bearings to be safely tucked away and forgotten.

This quality is to be found in Fafnir Ball Bearings with their unequalled load capacity and ability to stand up under the most grueling treatment. These bearings incorporate the time-proved Fafnir Balanced Design—larger balls and deeper races for greater radial and thrust capacity. The Fafnir Bearing Company, New Britain, Conn.



Fafnir's large-ball, deep-groove design provides the user of heavy bearings with longer life, fewer breakdowns and better quality—all so vitally important today.

**168 HOURS IS NOT ENOUGH**  
Round-the-clock production 7 days a week still doesn't meet the demands for ball bearings to make it. It has therefore been necessary to curtail the manufacture of several types and sizes of bearings. If you are not always able to get the type of bearing you have used previously we believe you will understand why.

## FAFNIR

### Ball Bearings

THE BALANCED LINE  
FOR ORDNANCE, AIRCRAFT AND  
INDUSTRIAL MACHINERY

When writing The Fafnir Bearing Company please mention Purchasing



# In a Change-over to *Plastics*



**—YOU CAN SOLVE YOUR FASTENING PROBLEMS SIMPLY AND QUICKLY!  
Call in a Parker-Kalon Assembly Engineer!**

When you start "ironing out" the assembly problems in your change-over to plastics, *Parker-Kalon can help you!* Parker-Kalon Assembly Engineers have shown you how to *save time and labor* on all types of metal assembly with Self-tapping Screws — AND, their knowledge and experience *with plastics* will be just as valuable to you.

They can show you how the right type of Parker-Kalon Self-tapping Screw can make fastenings to plastics quicker and easier than by any other fastening method. They can help you put P-K Screws to work on your assembly line without costly delays — for, no skilled hands or special tools are required. Get the *most* out of your switch to plastics — call in a Parker-Kalon Assembly Engineer, now! Write Parker-Kalon Corporation, 202-204 Varick Street, New York, N. Y.



**A TYPE FOR EVERY METAL OR PLASTIC ASSEMBLY**

*There's a P-K Self-tapping Screw for Every Type of Plastic Assembly*

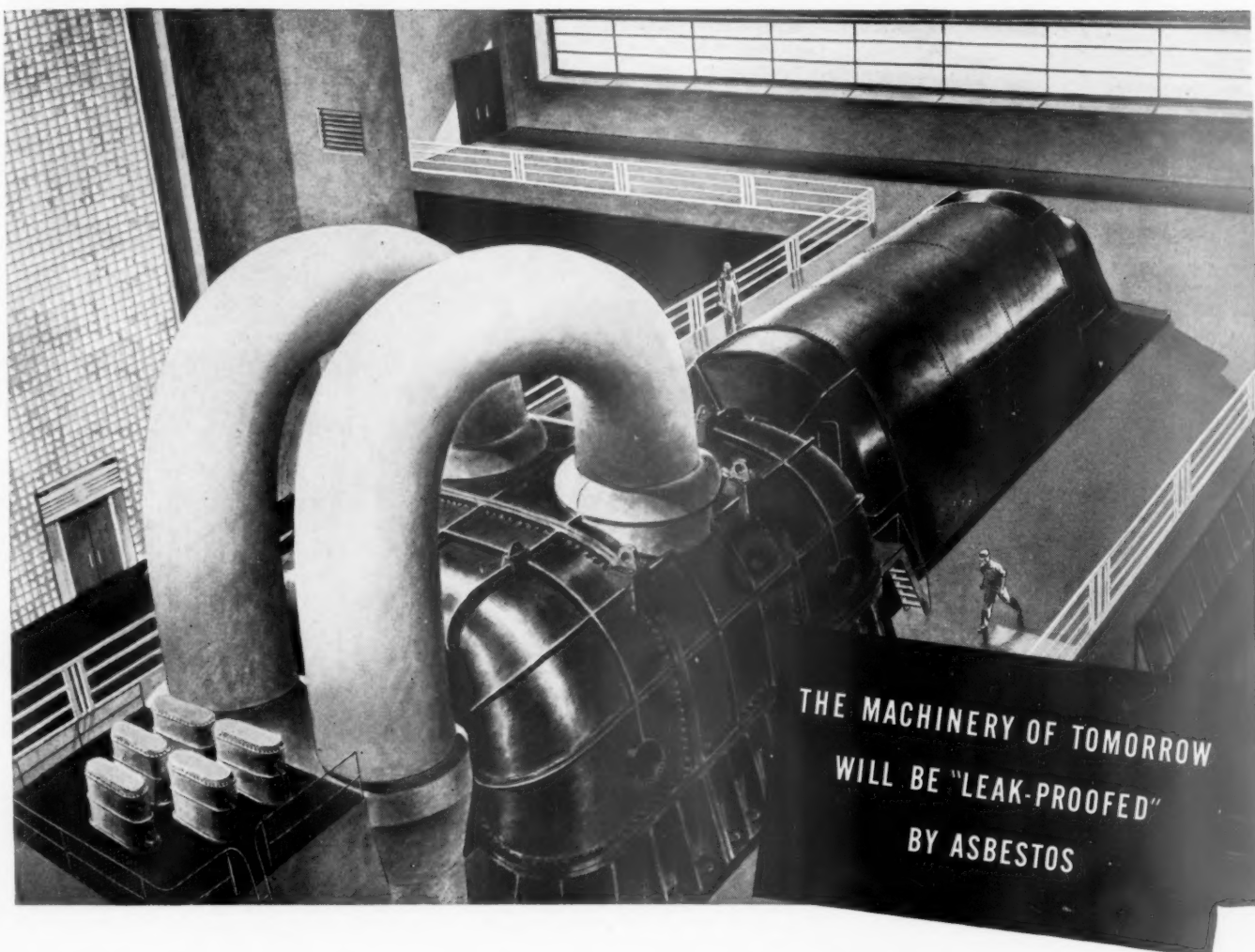
Whether your particular job requires a *thread-cutting* or *thread-forming* screw, there's a P-K Self-tapping Screw that will speed up your assembly by eliminating tapping operations or the use of tapped inserts. And, the correct type of P-K Screw will give you a **BETTER** as well as cheaper means of assembly. Remember, too, that the Parker-Kalon Quality-Control Laboratory — without counterpart in the screw-making industry — assures consistently reliable performance. "Doubtful screws" — screws that *look* all right but some of which fail to *work* right — are eliminated.

**PARKER-KALON**  
*Quality-Controlled*  
**SELF-TAPPING SCREWS**

Give the Green Light to War Assemblies

*When writing Parker-Kalon Corporation please mention Purchasing*

## *Looking ahead with Asbestos*



It is hard for the industrial engineer to imagine a better base for high temperature packings than asbestos.

For, wherever he looks now, he sees asbestos packings—either pure or in combination with a variety of other materials—keeping liquids and gases in their place in every sort of machine. K&M Packings, based on asbestos, dive with the submarine, soar with the airplane, do their super-efficient leak-proofing on every industrial front.

The peace-time record of K&M Packings foretells their still more extensive use, once the demands of war subside. Meanwhile, in our research laboratories we continue the search for new and vital uses for asbestos; and we invite you to suggest how we might adapt this versatile mineral to your greater service.

\* \* \*

*Nature made asbestos;*

*Keasbey & Mattison, America's asbestos pioneer,  
has made it serve mankind . . . since 1873.*

**KEASBEY & MATTISON**  
COMPANY, AMBLER, PENNSYLVANIA

*Makers of*


asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains



*When writing Keasbey & Mattison Company please mention Purchasing*

## Are You Overlooking Some Easy-to-Cut Costs?



Conserve Time, Materials and  
Space with the Aid of these  
Free  Booklets.

"How To Seal" and "How To Stack And Load," are two of H & D's Little Packaging Library booklets, prepared to help manufacturers plan more effective, more economical packaging. They show you how sealing, storing and stacking of corrugated shipping boxes can be made more efficient, how time in the shipping department can be made more productive, how sealing materials can be "stretched," how space can be more completely utilized.

For more tangible service, the facilities of H & D's Package Laboratory are available to all manufacturers seeking help in redesigning present packaging, preparing packages for tomorrow's competitive merchandising.

Like the counsel of H & D Package Engineers, these Little Packaging Library booklets are yours without obligation. Write for the copies you need. Be sure each man in your shipping and traffic departments has an opportunity to study the information they contain. It will help you save money today and tomorrow.

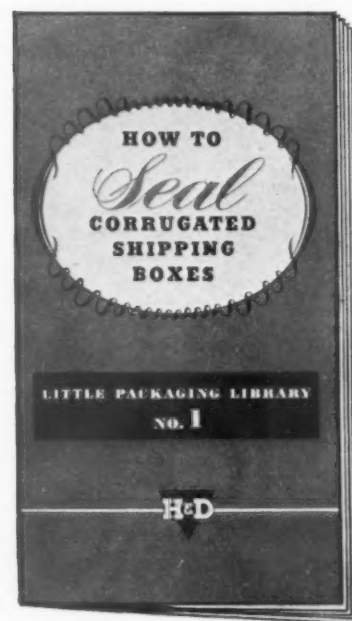


**HINDE & DAUCH** *Authority on Packaging*

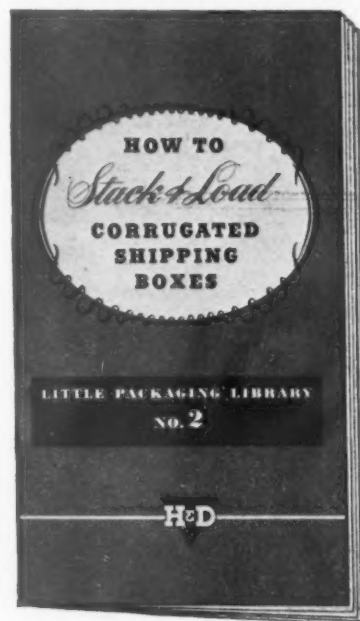
4223 DECATUR STREET, SANDUSKY, OHIO

FACTORIES IN BALTIMORE • BOSTON • BUFFALO • CHICAGO • CLEVELAND  
DETROIT • GLOUCESTER, N. J. • HOBOKEN • KANSAS CITY • LENOIR, N. C.  
MONTREAL • MUNCIE • RICHMOND • ST. LOUIS • SANDUSKY, OHIO • TORONTO

*When writing Hinde & Dauch please mention Purchasing*



Facts about the four most commonly used sealing methods, and how they are especially effective on certain types of shipping boxes, are outlined in this book.

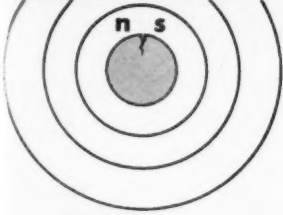


Eight rules for efficient stacking and loading are presented concisely in "How To Stack And Load." Write for your free copy.



## Here is a **LIE DETECTOR** for **SPRINGS**

### SPRING NEWS



When the heavy DC current passes axially through the cross section of the specimen a circular magnetic field is produced. The action of the current is only instantaneous, so that the magnetic field disappears when the magnetic reluctance is uniform throughout the cross section. However, any break in the circular path, such as would be produced by a seam, creates a bipolar permanent field at that point. Fine iron powder dusted on to the specimen will be held in place only where this field exists.

*W*IRE used in making springs is usually subjected by reliable spring makers to a number of tests . . . by Hunter, for example, to a tensile test, twist test, bend test, hardness test—and many others. Yet even these tests do not reveal a category of defects known simply as “seams”. The detection of seams involves a scientific method known as Magnaflux inspection. Sketchily, the procedure consists of magnetizing the

spring, powdering with iron “dust”, and inspection. This method is used to test samples of wire, for “jump” inspection of springs, and occasionally for 100% inspection. A lot of fuss to make over a spring? Not at all. Hunter makes such tests to catch flaws and learn why they occur, to aid in improving materials, to deliver the best springs scientific manufacture can produce for you.



  
**HUNTER**  
*Science in Springs*

HUNTER PRESSED STEEL COMPANY, LANSDALE, PENNA.

*The burning question*

**HOW CAN I GET  
MORE GROUND PARTS  
WITHOUT  
MORE GRINDERS**

*First possibility: Change the grinding wheel.*

*Second possibility: Change the grinding method.*

Try one, try both — but preferably on the advice of experience.

Norton field men or Norton distributors' men in the locality may be just the reinforced manpower your shop needs.

Many times they've turned production defeat into production victory.



**NORTON ABRASIVES**



**NORTON COMPANY, WORCESTER, MASS.**

BEHR-MANNING DIVISION, TROY, N. Y.

*When writing Norton Company please mention Purchasing*

# Fluorescent Users!

WHEN IT'S TIME TO REPLACE STARTERS OR BALLASTS...

Be sure they're  
**E·T·L\* CERTIFIED**  
and you'll get  
the most from your lighting



**Ballasts and Starters**—the "control units" that regulate lamp operation—have more to do with the satisfactory performance of your fluorescent lamps than any other part of your fixture. That's why it's important to take these two simple precautions when you need to replace Ballasts and Starters:

1. Specify Ballasts Certified by \*Electrical Testing Laboratories.
2. Specify Starters Certified by \*Electrical Testing Laboratories.

## YOU GET THESE ADVANTAGES

Longer lamp life. Greater lighting efficiency. Full use of your wiring system through high power factor ballast. Long life and dependable service from the units themselves. They're built to definite specifications which are an integral part of those set up for Certified FLEUR-O-LIER fixtures by MAZDA lamp manufacturers. They meet these specifications—



for they're tested and Certified by \*Electrical Testing Laboratories. That means double assurance of dependable, trouble-free operation.

Whether your present fixtures are Certified FLEUR-O-LIERS, Certified RLM, or any other type, insist on Certified Ballasts and Starters for top-notch lighting performance when you make replacements.

If increased war production necessitates the improvement or expansion of your present lighting facilities, write us for information about Certified FLEUR-O-LIERS, the fixtures that are built to definite specifications to give you Fluorescent Lighting at its Best.

FLEUR-O-LIER MANUFACTURERS • 2116 B. F. KEITH BUILDING, CLEVELAND, OHIO



# FLEUR-O-LIERS

CERTIFIED FIXTURES FOR FLUORESCENT LIGHTING

Participation in the FLEUR-O-LIER MANUFACTURERS' program is open to any manufacturer who complies with FLEUR-O-LIER requirements

When writing Fleur-O-Lier Manufacturers please mention Purchasing





Design is what makes one airplane fly higher and faster than another. It makes one gun shoot farther and straighter than another. One tank hit harder than another.

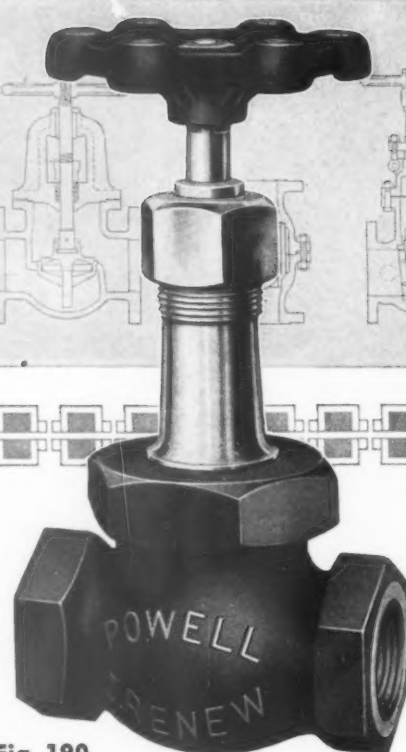
Design is what makes Powell Valves perform better and last longer in the industrial tasks to which they are assigned. It is exemplified in the vast assortment of special valves built to do special jobs that make up the Powell Line. It is carried on by a corps of highly trained experts working with the most modern technical equipment available. It will continue to represent the part that Powell has played and is still to play in the forward march of Industry.

### **The Wm. Powell Company** Cincinnati, Ohio

**Fig. 190**—Iron Body Bronze Mounted "Irenew" Globe Valve with screwed ends, union bonnet and regrindable, renewable, nickel-bronze seat and disc. Made in sizes from  $\frac{1}{4}$ " to 3", inclusive, for 150 pounds working steam pressure.

**Fig. 1460**—Iron Body Bronze Mounted "Master Pilot" Gate Valve with screwed ends, rising stem, bolted flanged bonnet and taper wedge solid disc. Sizes  $\frac{1}{4}$ " to 2" for 150 pounds W.S.P.;  $2\frac{1}{2}$ " to 3" for 125 pounds W.S.P.

These valves meet today's requirements of long life, dependable service, and easy, quick repair if necessary. Can be repacked under pressure when wide open.



**Fig. 190**



**Fig. 1460**

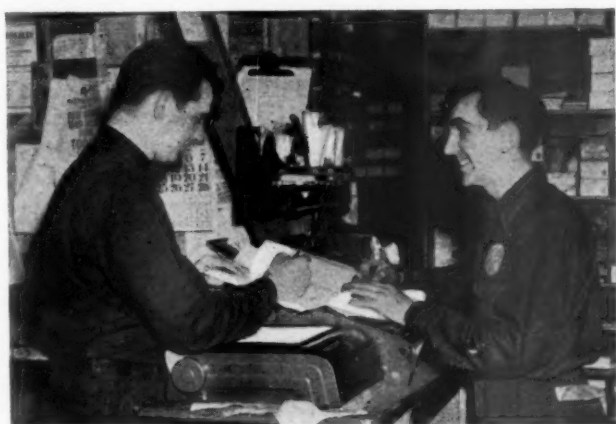
# POWELL VALVES

*When writing The Wm. Powell Company please mention Purchasing*

# G-E Wiring Materials Distributors



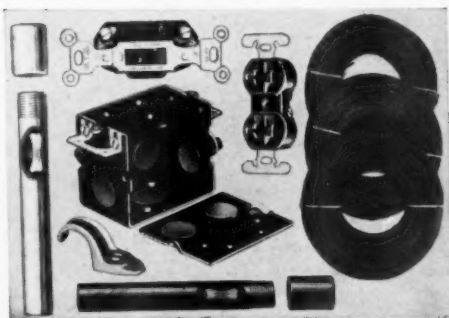
Meeting being held at South Bend Electric Co., South Bend, Ind., to formulate plans for providing best service possible to customers in aiding the war effort. Left to right beginning with man in foreground of picture: Paul P. Burkart, C. O. Moyer, vice-presidents H. W. Schoenduve and F. E. Kilander, and R. F. Elliott, Jr.



C. J. Arthofer (right), warehouse supervisor, Crescent Electric Co., Dubuque, Iowa and E. A. Schueller, warehouse man are here checking delivery schedules preparatory to loading trucks with materials to be sent to a war project.

## FOR G-E WIRING MATERIALS

See your G-E Wiring Materials Distributor for conduit, wire and cable and wiring devices suitable for your plant. Appliance and Merchandise Dept., General Electric Co., Bridgeport, Conn.



G-E district representatives in all parts of the country help distributors serve customers. Here is L. T. Pearson, who covers West Virginia and parts of Pennsylvania and Ohio.

## Offer Help in Obtaining Wartime Plant Efficiency

Call the nearest G-E Wiring Materials Distributor for help in selecting materials for wiring new factories and for rewiring existing factories. Ask a representative to call. He'll be pleased to suggest materials for special-purpose wiring . . . to help with priority problems . . . to expedite delivery of suitable needed wiring materials.

The wiring materials handled by your G-E Wiring Materials Distributor are high quality and are sure to give dependable service. They include 5 different conduits, 5 different types of building wire, many cords and hundreds of wiring devices and boxes and fittings.

Your G-E Wiring Materials Distributor is eager to cooperate with you in aiding the war effort. Take advantage of the services offered to make your plant electrically efficient.

**GENERAL  ELECTRIC**



H. W. Henline (left), vice-president of The Protective Electric Supply Co., Fort Wayne, Ind. and Thomas Popp, salesman, are lining up materials for immediate delivery to a customer engaged in rush war construction.

*When writing General Electric Co. please mention Purchasing*

## AN ELECTRICAL WHOLESALER HELPS SPEED WAR PRODUCTION



## WESCO "invented" light to store explosives

## WESCO SPEEDS PRODUCTION

- \* 2½ acre Army building was rushed to completion in 60 days through Wesco's ability to maintain 24-hour a-day warehousing facilities and delivery service.
- \* Wesco's delivery of 23 items within one day to a shipyard saved nearly 2-months delay, maintained construction schedule and kept hundreds of men on the job.

## WESCO SERVES BUSINESS

- \* By providing trained sales and engineering personnel.
- \* By offering prompt delivery of electrical items from large stocks.
- \* By extending credit to help finance jobs.

*The name that means  
everything in electricity*

Added 12 Safe Night Hours to Work Time  
in U. S. Ammunition Depot

A huge ammunition depot, piled to the skylights with bombs, shells and other explosives, was ordered on a 24-hour schedule. But, there was no light at night! No glass windows! No electric current; and wiring was forbidden! Problem—to provide light at night—in 3 weeks.

A Wesco engineer figured you could shoot light from outside the building through iron ventilation shutters, and bounce it off the ceiling into the canyon-like aisles inside. Four 1000-watt floodlights were hung on the shutter sills. Power was supplied 100 feet away from the building by portable gasoline engines, driving Westinghouse generators.

Devising the scheme and completing the job in 3 weeks is typical of the ingenuity and intelligence Wesco brings to customers' problems—now to speed Victory; later to serve peacetime business.

# Westinghouse

## ELECTRIC SUPPLY CO.

150 VARICK STREET • NEW YORK, N. Y.

A NATIONAL DISTRIBUTING ORGANIZATION WITH 79 BRANCHES

*When writing Westinghouse Electric Supply Co. please mention Purchasing*



# PURCHASING PREVIEWS

From the Washington office of

## **PURCHASING**

National Press Building

Washington, D. C.

July 1, 1942

### For Purchasing Executives:

**NEW PHASE IN PRIORITIES**—Effective July 1st, three important changes are made in the priorities system, and the distribution of materials in our wartime economy enters a new phase, the basic pattern of which is the central control of materials flow through allocation, to serve the needs of war production and essential civilian requirements most effectively.

The first of these changes is the mandatory use of the Production Requirements Plan by the vast majority of manufacturing concerns, scheduling essential requirements on a quarterly basis, in advance. The plan supersedes all other priority instruments in the fields which it covers.

The second development is the application of the Allocation Classification system, or "End Use Code," identifying all materials according to the nature and use of the finished product and according to the type of purchaser.

The third change is a uniform procedure for applying and extending all preference ratings by a single form of certification on orders for materials, eliminating the necessity of furnishing copies of priority certificates.

The basic principles underlying these policies and procedures are not new; they have been in process of development and partial application over a period of some months. Their adoption as a unified program at this time marks the transition to a new phase of administration reflecting the need for conservation and planned use of essential and scarce materials—a need which is occasioned by the growing demand from expanded manufacturing facilities now coming into production, from the increasing magnitude of the military program, and from the recent pooling of all resources among the Allied Nations, as well as by dwindling stockpiles. The critical situation is expressed in terms of supply, but as a matter of fact the determining factor has been the enormously increasing demand. With the exception of a relatively few materials of foreign source, the outstanding example of which is rubber, supply has been notably expanded, but demand has expanded to an even greater extent. Under these circumstances, coupled with the primary importance of the time element in making our production effective and getting supplies to the fighting fronts at the earliest possible date, the broader policy of allocation is inevitable.

RESPONSIBILITY FOR PRODUCTION—Coincident with these changes comes a shift in responsibilities whereby production comes more directly under the procurement branches of the armed forces, so that both purchasing and production are now decentralized. But WPB is neither signing off from this responsibility nor being relieved of it. This, too, is a logical development indicative of a changing phase of the general problem rather than reflecting any change in basic policy or any criticism of WPB's accomplishment.

It must be remembered that the supply and flow of materials are the very essence of procurement and are now the limiting factors of production, and in concentrating attention and control on materials, WPB actually exercises the direction and policy of the entire program. That such a reorganization is now possible is in itself a tribute to the accomplishment of WPB, in effecting those essential preliminary steps of expanding, converting, and establishing new production facilities, and to a large extent in training and furnishing an executive staff to carry on the work. By these accomplishments, the civilian agency has brilliantly discharged the function for which it was originally created.

At the same time, WPB is in a position to place new emphasis on other responsibilities, hitherto subordinated to the primary job of producing war materials and products, but no less important to the achievement and maintenance of a balanced national economy so far as possible within the limitations set by military necessities. The Division of Civilian Supply—which includes everything that does not go directly into war production—will be of increasing importance. It involves housing, transportation, utility services, and the repair and maintenance of those hundreds of items on which new production has been halted. Heretofore the general policy has amounted to permitting industry to use for such purposes whatever materials are left over when military demands have been satisfied. But now this marginal surplus is less, and demands are mounting. Allocation in this field, too, is indicated.

A beginning has been made in the allocation of pulp and hides. These moves are seen as a forerunner to further extension of the PRP procedure, and it is now predicted that by the fourth quarter of 1942 no industry will be exempted from this plan. Taken in connection with the information provided by the end-use symbols, this will provide the machinery for distribution of all materials, by WPB, on the statistical basis of known periodic requirements.

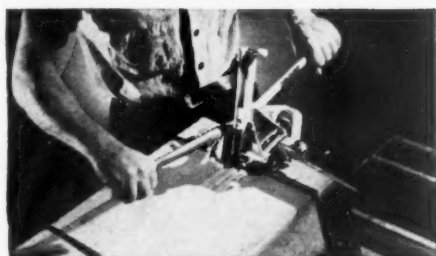
Despite the groundwork already laid, this will be no simple task, for the statistical data will be enormously multiplied, and there will be a need for simplification and revision of the plan, for complications have already been encountered in the application of the end-use code even though the system is scarcely under way.

A third problem, not new but still unsolved, is that of the small business. It is vital because this capacity is needed in the war effort, because it is now at the crux of the "priorities unemployment" that is a sore spot in our economy, and because these small plants typically are without the resources and managerial skill to plan for readjustment after the war, and this must be considered as a part of the overall problem. The Smaller War Plants Corporation, created by Congress last month, is not the least of WPB's responsibilities.

—THE EDITORS

# MEET FEDERAL STRAPPING SPECIFICATIONS

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- ☐ STRAP-APPLYING TOOLS
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- ☐ STITCHING WIRE

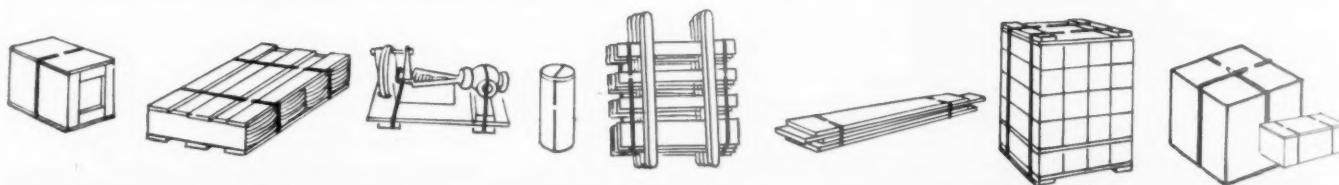
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# PURCHASING

JULY, 1942 . . . CONTENTS



Published monthly by  
**CONOVER-MAST PERIODICALS, INC.**  
 Publication Office: East Stroudsburg, Pa.

Editorial and Executive Offices:  
 205 East 42nd Street, New York, N. Y.

HARVEY CONOVER..President and  
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 333 N. Michigan Ave., Chicago

## Advertising Representatives:

Joseph Mehr, 205 East 42nd St.  
 New York  
 Richard C. Grove, Leader Building  
 Cleveland



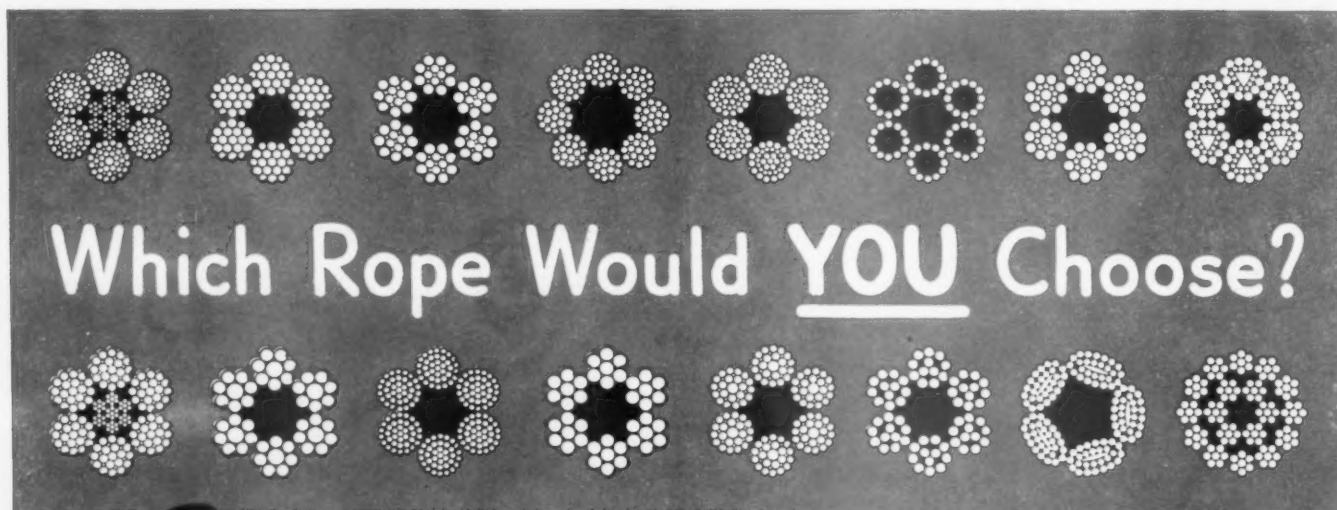
PURCHASING is an independent journal not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser."  
 VOLUME XIII, NUMBER 1, 35c per copy, \$3.00 per year. Extra postage for Canadian and foreign subscriptions \$1.00 a year. Contents are indexed weekly and annually by the Engineering Index Service. Copyright 1942 by Conover-Mast Periodicals, Inc., in the U.S.A.

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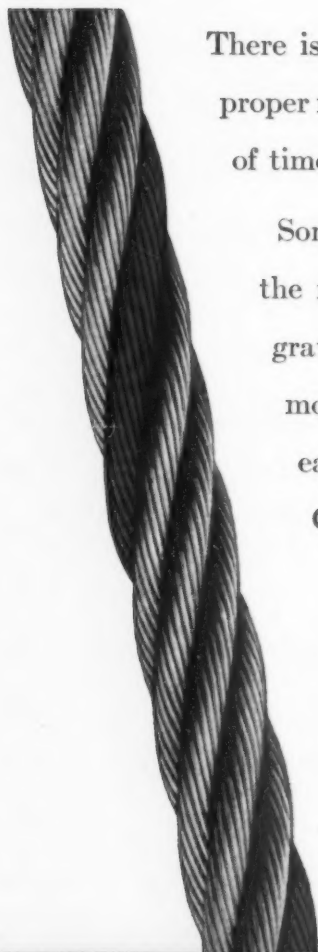
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## NO TIME FOR SNIPING

**C**URRENT headlines from Washington bristle with violent criticism of the War Production Board and the Office of Price Administration, their dollar-a-year executives, and "nearly every conceivable type of extravagant waste" as practised in the business dealings of the War Department. Typical of these assertions are the statements of the Truman Committee and the House Military Committee. These attacks are a devastating blow at national morale just at a time when confidence is most sorely needed.

The assertions can be liberally discounted by the factual reports, on the same pages, of production accomplishments substantially better than the most optimistic schedules, and the unanimous endorsement by the House of the largest appropriation in history—more than 42 billion dollars—for war expenditures, which seems to be a practical vote of confidence in the agencies that are to invest this sum in the building of a military machine.

As we have frequently been reminded, this is an election year, which may go far in explaining the sudden vocalization. Furthermore, recent Allied military reverses set the stage psychologically for this type of criticism. But such explanations do not condone the act.

That there have been mistakes, no one attempts to deny. It is inevitable in a project of such gigantic scope. But the accomplishment has been even greater, and that solid achievement can not be overlooked. In such a rapidly moving situation as this, yesterday's good judgment may not be good judgment today. Yet we can not afford to indulge in hindsight or to delay action to see what tomorrow's developments may be. The best business brains and judgment of the country, in and out of Washington, are contributing a total effort to meet this emergency. Our progress would be a sorry record if they had hesitated to act, and if industry itself had not anticipated that action in many cases by taking the initiative in plant expansion and conversion, and in undertaking commitments of their resources largely on faith and intent.

Democracy implies the right to express a critical opinion. It also implies the obligation to support duly appointed leadership which is eminently accomplishing its objective. The one test for every public utterance today is "Will it help to win the war?"

*Stuart F. Neimitz*



# Switch to **NE** Alloy Steels

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TO HELP conserve nickel, chromium, vanadium and other scarce metals, the War Production Board's ablest metallurgists have developed NE (National Emergency) Alloy Steels. These new steels contain relatively small quantities of alloying elements in such combination as to produce physical properties usually attributed to steels of much higher

alloy content. The War Production Board stipulates the use of the new NE Alloys to *replace* the standard SAE and AISI Alloy Steels for a wide range of applications.

Ryerson NE Alloy Steel stocks in six specifications, all fine grain, will be available shortly; and will consist of sizes ranging from 1/2-inch to 7-inch rounds, in three groups:

### **Carburizing Grades**

NE 4023 and NE 8620.

To Replace AISI and SAE

Nos. A 2300, A 2500, A 3100,  
A 4100, A 4600, A 5100, A 6100.

### **Medium Hardening Grades**

NE 4042 and NE 8744.

To Replace AISI and SAE

Nos. A 2330-35, A 3130-35,  
A 4130-35, A 5130-35, A 6130-35.

### **High Hardening Grades**

NE 4047 and NE 8749.

To Replace AISI and SAE

Nos. A 2300, A 3100, A 3200,  
A 4100, A 4600, A 6100.

Only limited data on heat-treatment response or physical properties will be available when NE Alloys are first ready for shipment. The WPB is anxious to know how these new steels will function and requests all NE Alloy users to report results in working with these new steels. Ryerson will cooperate fully with

users, supplying laboratory test data, and all other available information.

• • •

*If you now use Alloy steel*, let Ryerson help you in adapting NE Alloys to your requirements wherever possible. Write, wire or phone the nearest of the ten Ryerson plants.

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L. B. Kuhns, General Superintendent of Plancor Construction, and Gordon W. Cameron, Coordinator of Defense Plants Construction.

## GETTING MATERIALS on SCHEDULE

Successful procurement record is achieved by coordinating suppliers' production with the overall program and helping them to plan and work toward required delivery dates

By Stuart F. Heinritz

**W**HEN the first three of the Aluminum Company of America's new plant extensions came into production they revealed an extraordinary adherence to construction and equipment schedules set months beforehand. The first unit came in two days ahead of the scheduled date. At the second and third units, the wheels were ready to turn just one day late and four days late respectively. The other thirty-two major projects in this vast program are practically up to schedule, some of them a little ahead. Geographically this immense undertaking covers the country from the Atlantic to the Pacific shores, and from the Canadian

border to the Gulf of Mexico. It embraces all types of construction materials and accessories, power facilities, production machinery and plant equipment, a large part of which had to be specially built. It has involved, to date, placing *and getting delivery on* nearly 9,000 purchase orders. The achievement constitutes an outstanding record of precision in scheduling and procurement.

Purchasing men have begun to ask about the expediting system that has made this record possible. Alcoa's answer is that they don't use expeditors. They have, in fact, a distinct aversion to the word. They be-



[illegible]

Planned procurement starts with a detailed schedule of construction and equipment items, with date of delivery requirements, and weighted to indicate their relationship to completion of the project.

lieve that expediting, in the usual sense of pressure tactics, follow-up, camping on the suppliers' trail, hounding and pushing for deliveries, would never have been equal to the job.

Instead, the Aluminum Company has coordinators. This is not a quibble on terms or titles; it is a functional description of policy and method. For this procurement program has been successfully carried forward on the basis of thoroughgoing planning, helping the suppliers to plan their procurement and production, and coordinating the overall problem during the entire period covered by each project, from the purchasing headquarters in Pittsburgh.

It should be noted at the outset that specifying and purchasing departments have simplified the problems wherever possible, using identical shop drawings and bills of materials for many of the buildings, and by

standardizing requirements so that an order for one hundred and seventy-five cranes, destined for use at many separate points, could be made by one manufacturer to one specification of size and span, so that the only variation was in the electric current characteristics of accessory motors. The effect of that one standardization is reflected not only in the manufacturer's own increased production efficiency, but in similar advantages to the foundries and all other subcontractors involved.

Another policy that has been exceedingly helpful is planning and ordering sufficiently in advance of the requirement to permit the setting of a delivery date that is coordinated with the program as a whole and at the same time represents a practicable schedule for the supplier. But the crux of the situation still remains in seeing to it that this delivery date will be observed. To a greater or less degree, that is the problem of every purchasing department today.

In common with all industrial organizations, the Aluminum Company had a priorities problem in purchasing as the National Defense Program got under way. At the beginning, when priorities were voluntary and covered only a few classes of materials, it was handled by one man and a stenographer, who were able to do the necessary expediting on such materials in connection with their regular assignments. As the situation increased in complexity and magnitude, however, this became a more highly specialized function. The priorities division today has a staff of twenty-three, engaged in soliciting preference ratings, administering priorities with respect to vendors, and contacting Washington on special cases. This all ties in closely with procurement and getting deliveries, but it also emphasizes the fact that coordination and follow-up are likewise a specialized responsibility and function within the purchasing organization.

The present plan grew out of a meeting in Pittsburgh last November, prompted by the idea that the

company's district sales staff might provide an organization ready-made and peculiarly qualified for the job to be done by virtue of their strategic location in industrial centers throughout the country and their established personal contact with individuals in the plants of virtually every potential supplier. At this meeting the broad policies were outlined—particularly the principle that the time to start the job was when the order was placed, and not at the last minute when delivery was required or when some trouble had developed. At this meeting, too, the word "expediting" was definitely put in the discard. These sales executives had themselves been subjected to "expediting" on the part of their customers; they didn't like it, and they knew that it was not the most effective approach.

In a memorandum addressed to all District Purchasing Agents in January, 1942, outlining the plan as it had by that time been developed, Gordon W. Cameron, who has been drafted from his position as Boston Sales Manager to serve as Coordinator of Defense Plants Construction, stated:

"This temporary service, purely auxiliary to the

Purchase orders follow the normal course, but are coded for accounting purposes. Priority ratings and delivery date are shown on the face of the order.

**ALUMINUM COMPANY OF AMERICA**  
ACTING FOR AND ON BEHALF OF  
**DEFENSE PLANT CORPORATION**  
PURCHASING DEPARTMENT  
801 GULF BUILDING  
PITTSBURGH, PENNA.

SHEET NO. \_\_\_\_\_  
DATE \_\_\_\_\_  
CODE NO. PLANCOR \_\_\_\_\_  
PRIORITY RATING \_\_\_\_\_  
CERTIFICATE NO. \_\_\_\_\_  
SERIAL NO. \_\_\_\_\_

ALCOA-D.P.C. ORDER NO. \_\_\_\_\_  
THE ORDER NUMBER AND REQUISITION NUMBER  
MUST BE SHOWN ON ALL SHIPMENTS, INVOICES,  
CORRESPONDENCE, ETC.  
RENDER SEVEN COPIES OF INVOICE

REQ. No. \_\_\_\_\_  
PLEASE FURNISH US WITH THE MATERIAL SPECIFIED BELOW ON THE TERMS HEREIN SET FORTH AND SUBJECT TO CONDITIONS AS  
SHOWN AND INVOICE. DEFENSE PLANT CORPORATION, ALUMINUM COMPANY OF AMERICA, 801 GULF BUILDING, PITTSBURGH, PENNA.  
CONTROL No. \_\_\_\_\_  
QUANTITY \_\_\_\_\_  
DESCRIPTION OF MATERIAL \_\_\_\_\_

PROPOSAL No. \_\_\_\_\_  
TO: \_\_\_\_\_

PRIORITY

PRIORITY PREFERENCE RATING  
Serial No. \_\_\_\_\_  
of \_\_\_\_\_  
This rating may be extended upon the terms of said Order, copies of which may be obtained from  
the undersigned or from any office of the War Production Board.

Under the terms of this preference rating order an A-1-A rating should only be extended when such rating is necessary to meet the  
required delivery date. If a satisfactory delivery promise can be obtained with an A-1-B rating, this rating should be used, and it then  
becomes mandatory upon the supplier to meet the agreed upon delivery date shown on the order. This delivery, which is based on the  
A-1-B rating only, then cannot be deferred by any other preference rating whether higher or not except as specifically directed by the  
Director of Industry Operations.  
Note—If this preference rating order is extended for purchases of allocated steel products, be sure when filing the required forms that the  
name "Alcoa" appears in the end product column, and if carrying an A-1-B rating the word "green" appears in the preference rating  
column.

By Herbert H. Hall  
Supervisor of Priorities

ALUMINUM COMPANY OF AMERICA  
ACTING FOR AND ON BEHALF OF  
DEFENSE PLANT CORPORATION  
RALPH O. KEEFER, PURCHASING AGENT

PER \_\_\_\_\_

NOTE: IN ACCEPTING THIS ORDER IT IS UNDERSTOOD YOU AGREE TO THE TERMS AND CONDITIONS SHOWN HEREON AND TO THE CONDITIONS PRINTED ON THE BACK HEREOF

SEVEN COPIES OF INVOICE MUST BE RENDERED ON DAY OF SHIPMENT. PACKING SLIP MUST ACCOMPANY SHIPMENT.  
SIGNED ACKNOWLEDGMENT COPY MUST BE RETURNED TO ALUMINUM COMPANY OF AMERICA AT ONCE.  
SHIPPING INSTRUCTIONS: ALUMINUM COMPANY OF AMERICA, GENERAL TRAFFIC DEPT., WILL FURNISH ROUTING INSTRUCTIONS FOR ALL CARLOAD SHIPMENTS.

FORM NO DPC-1

Purchasing Department, is based on the principle that, in difficult negotiations, personal contact of the parties concerned usually brings about best results. In normal times, our Purchasing Department can make the necessary personal contacts in procurement matters, but, under present conditions, this is impossible with respect to all of our detailed procurement.

"However, we do have a large, well distributed group of men, trained in personal contact work—our salesmen. As a coincidence, the companies to which we sell aluminum are, generally, vendors of the materials which we require in our manifold operations. Thus it develops that, in many cases, our salesmen already possess valuable personal contacts with our vendors.

"In these circumstances, the Management of the Company has placed the services of the Sales Department at the disposal of the Purchasing Department.

"For purposes of public consumption, we refer to this auxiliary service as a 'coordinating service', and we refer to the individuals concerned as 'coordinators'.

"In sixteen of our sales offices, we have selected a veteran salesman as a regional coordinator, and he has available to him, on a first-demand duty basis, each of the other salesmen in his office.

"To correlate the work of these regional coordinators and to establish a point of contact with the Purchasing and Engineering Departments, a headquarters has been established at Pittsburgh."

The five-page memorandum, describing in considerable detail how the District Purchasing Agents and Coordinators were expected to function under the plan, carried the following postscript:

"P. S.—We think that the word 'expedite' has not slipped into this memorandum."

#### **Staffed for Action**

The present organization includes a staff of nineteen persons in the Coordinator's office at Pittsburgh, sixteen duly appointed Regional Coordinators in District Sales Offices (in other cases the District Sales Manager serves in this capacity), and a field staff of seventy-five men, all drawn from the Sales Department, who are devoted almost full time to this activity.

Nominally, the services of this staff are restricted to the procurement of materials for the construction and equipment of new plants and plant extensions, and the system has been set up primarily on this basis. As a practical matter, there are a number of orders on which it is obvious that no particular procurement effort will be required, or which can be better handled by the District Purchasing Agent because of local conditions; such cases are turned over directly to the District Purchasing Agents for their own follow-up without encumbering the procedure with a lot of useless motions. On the other hand, while the Purchasing Agents will normally handle procurement of operating supplies as in ordinary times, they are at liberty to call upon the Coordinator for assistance in any particular case where it seems desirable to do so, and the same methods have been found equally effective on purchases of this sort. The effort is to avoid handling general or routine procurement work which might impair the potential value of the Coordinator's office in furthering the construction program. It is emphasized that material procurement is the prerogative and responsibility of the Purchasing Department. The Coordinator's office does not assume this prerogative nor take over this responsibility. It acts throughout, merely

as agent for the responsible Buyer or District Purchasing Agent.

In a typical case, the system starts with a detailed schedule drawn up for each building or unit by the General Superintendent of Construction for the Defense Plants, L. B. Kuhns. Illustrating the close cooperation of all groups in this enterprise, Mr. Kuhns shares an office with the Coordinator, and also shares the services of two administrative assistants and two stenographers. This schedule, in addition to setting a date for the starting and completion of each phase of construction and equipment, shows a weighted percentage of total construction and of total equipment that serves as a measure of the progress made from week to week toward a plant that is complete and ready to operate. The Coordinator supplies a copy of this schedule to each requisitioning engineer, in order that the delivery dates asked for on each item will be determined in relation to the complete time-table for each project. In the bidding stage, this schedule is also furnished to contractors as a basis for their planning and estimating.

#### **Normal Purchase Procedure**

The purchasing procedure follows the usual course, and is handled by the regular purchasing staff. A special purchase order form has been adopted, however, indicating the relation of the Aluminum Company to the Defense Plant Corporation in these transactions, and identified by a separate series of serial numbers, keyed to the particular project and to the classification of material, as well as for segregation in accounting for these expenditures. Printed on the face of this order is a statement of the applicable priority preference rating and authorizing its extension. The date of required delivery is typed in on the purchase order when it is made out—an honest time requirement, which thereupon becomes the objective of the Coordinator and his staff to meet.

Three extra copies of these purchase orders are made—two working copies for the Coordinator's office in Pittsburgh, and the third sent promptly to the Regional Coordinator in the district where the order is placed. This policy of decentralized action and centralized control is observed throughout the procedure; the Regional Coordinator for the Pittsburgh district is located in the Pittsburgh sales office, in a separate building from the Purchasing Department and the Coordinator's office.

#### **Following the Order**

The Regional Coordinator finds out where the material is to be manufactured, and makes a personal contact promptly, with a copy of the purchase order in hand. He makes sure that the supplier knows about using and extending the priority rating. Basically, then, it is his function to impress upon the supplier the importance of meeting the delivery date, and to help in any possible way to line up the supplier so that this requirement can be satisfied. This is primarily a selling job. It is also a service job. And in the detail of its execution it is subject to exactly the same type of control and coordination applied to the order itself.

For example, if the supplier in turn must procure materials or parts to fulfill his order, the Regional Coordinator secures a tabulation of these subsidiary requirements and this information is reported to the Regional Coordinators in the districts where the sub-



The Field Superintendent bases his weekly progress report on the analysis and schedule of the original project plan, or as it may be revised from time to time.

WEEKLY PROGRESS REPORT							
PLANCON		BUILDING NO.					
REPORT NO.		WEEK ENDING					
SUPT.		THESE COL'S. TO BE FILLED BY FIELD SUPT.				THESE COL'S. FILLED BY PGH.	
ITEM	SCHEDULE		PROGRESS IN PERCENT			% OF TOTAL BLDG. OR EQUIP.	% OF TOTAL COMP.
	START	FINISH	ACCM'D. LAST REPORT	THIS REPORT	ACCM'D. THIS REPORT		
Foundations	1-17	3-14				10	
Structural Steel	3-28	4-25				25	

COMPUTATION SHEET FOR WORK									
SCHEDULED COMPLETED									
PLANCON		REPORT NO.		WEEK ENDING					
BUILDING NO.	% Bldg. (a)	% Factor 1	% Equip. (b)	% Factor 2	% Factor 3	% Factor 4	% Factor 5	% Factor 6	% Factor 7
1-B. only		25							
1-E. unit 1				37.5					
1-E. unit 2				37.5					
4&6-B. & E.		30		70					
5-E. only				100					
7-E. only				100					

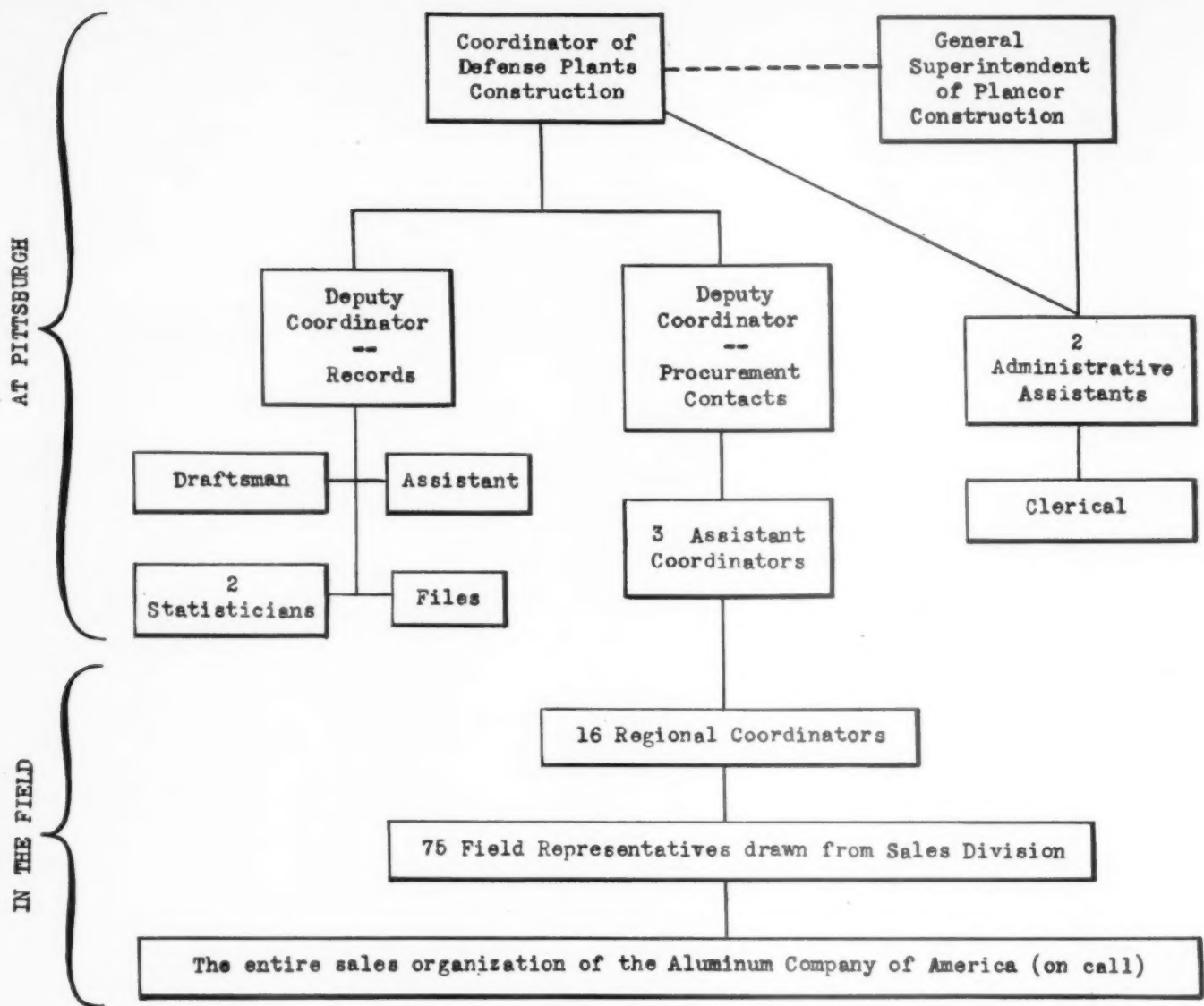
SUMMARY OF WEEKLY PROGRESS REPORTS				
PLANCON	REPORT NO.	FOR WEEK ENDING		
BUILDING NUMBER AND DESCRIPTION	% OF BLDG. SCHEDULED	% OF BLDG. COMPLETED	% OF EQUIP. SCHEDULED	% OF EQUIP. COMPLETED
1-Rectifier Station Bldg.				
1-Rectifier Equip. 1st Unit				
1-Rectifier Equip. 2nd Unit				
4 & 6 - Pot Rooms				
5-Alumina Storage				
7-Alumina Storage				
8 & 10 - Pot Rooms				
9-Alumina Storage				
11-Alumina Storage				
30-Transformer Service				
32-Redding & Lining				
34-Metal Service				
36 & Conveyor Bridge to 5				
41-Laboratory				
44-Machine Shop				
48-Aluminum Plant Washroom				
52-Carbon Matls. Storage				
54-Carbon Manufacturing				
54a-Carbon Mixing				
56-Carbon Transfer				
58-Carbon Baking				
59-Carbon Cleaning				
62-Pump House				
66-Boiler House				
TOTAL PLANT	Scheduled	%		
	Completed	%		

A computation sheet is provided for each project, by which the weekly progress reports are translated into a general summary.

Each week, there is complete information available on the actual progress of every project, in relation to the scheduled progress. This information is also charted for quick visual reference.

contractors are located, and the process is repeated until every bit of material involved in the purchase has been correlated with the overall schedule. These coordinating reports are attached to the working copy of the purchase order in the Coordinator's Office at

Pittsburgh, so that the entire transaction, with all its procurement ramifications, is collated in a single file record. That careful attention to detail has been found very useful in cases where the supplier himself has no adequate follow-up system.



The very complete coverage provided by this coordinating system has also proved extremely valuable. A case is cited where four Regional Coordinators collaborated on a single item—lining up a small manufacturer in Pennsylvania to furnish a part for a subcontractor in St. Louis, supplying a prime contractor in Knoxville, on an order placed in Pittsburgh—and the complicated job was accomplished within twenty-four hours.

Having lined up the supplier at the outset, and given all necessary help in his procurement program and in planning his work, the vendor is placed upon his honor to observe the production schedule which will meet the delivery date. Most of these orders are placed early enough to permit orderly manufacture and four to five months for delivery. Unlike an "expediter", the Regional Coordinator does not proceed to hound the supplier, yet he has a responsibility for follow-up, and keeps in touch with the order frequently enough to have assurance that it is going forward as scheduled, but not so frequently as to irritate the supplier. A practical working rule is that contacts should be made at least once a month, and that no contact should be a matter of perfunctory routine. If it develops that production of the order is in arrears, the procedure is to start all over from the beginning and line up the production schedule once more. It is recognized that

The coordinating organization consists of a small staff at Pittsburgh, working closely with the Construction Engineer, and a force of Regional and Field Coordinators that reaches directly into the plant of every supplier.

facts must be faced in order to get results, and that no one can be forced to do the impossible. However, from the experience of several months, it is shown that better than 90% of suppliers stay lined up once the original contact and schedule has been established. To date there has been no major missing link to hold up vital progress on any of the projects. It cannot be predicted that this record will be maintained with greater limitations and allocations imposed by government decree, for those are situations with which no system could cope.

The Regional Coordinators have devised their own system of follow-up and have considerable discretion in handling a situation so as to accelerate deliveries. For example, they have limited authority to change unimportant phases of specifications and terms to hasten the completion of an order—such as authorizing shipment by express instead of fast freight, or the use of 1 1/4" rod for 1 3/16" rod if the latter is not available. Such an instruction is subject to correction by the Purchasing Department, which has final authority and responsibility, but in general the Coordinators can

act for the Purchasing Department with the assurance that their judgment will be respected and their instruction backed up. It should be noted in this connection that all of these salesmen have engineering training to guide their decisions.

On matters of greater importance, the policy is to reserve decisions and control in the central office, where materials scheduled for a particular project may be allocated to another where greater urgency exists, or where the progress on the two projects is at a stage where greater immediate utility can be obtained by switching the destination. As a matter of purchasing policy, too, engineers and buyers may be willing to waive certain phases of the specification, substituting types and sizes of steel, for example, which are immediately available in place of waiting for a place on a rolling schedule; propositions based on such necessity or experience will always be considered.

This policy of central control applies both to the Regional Coordinators and the District Purchasing Agents. The latter are encouraged to refer their procurement troubles to the Coordinator at Pittsburgh rather than going to the Regional Coordinator with a special request or going direct to the supplier. This makes it possible to institute the most effective action promptly, through the Regional Coordinator closest to the problem or by some other means. The code word "Urgent" at the end of a telegram commands immediate action, and every one in the organization knows that this will be effective just as long as it is not overdone.

Meanwhile, in the office of the Coordinator, two purchase order files are maintained. One of these is arranged according to project or building numbers, and is used as an index to the other file as questions arise in connection with any operation. The second file is arranged alphabetically according to suppliers' names, and contains a copy of the purchase order to which all coordinating reports are attached. A simple tickler system is operated against this. As soon as materials are shipped against an order, it is lifted from the active file and put into the permanent record. The function of this office in respect to these open orders is chiefly to perform the initial step of seeing that the matter gets to the attention of the proper Regional Coordinator and to keep track of it in relation to the project as a whole.

### Weekly Progress Reports

The larger responsibility is to see that procurement difficulties do not interfere with scheduled progress in construction and equipment. To this end, the Coordinator, jointly with the General Superintendent of Construction, receives a weekly progress report from the construction superintendent on each project. These reports are in considerable detail, covering all types of information of interest to the General Superintendent of Construction, as would be expected in any normal procedure. For statistical purposes, and as an important adjunct to this system of control, the heart of the report is a single page form, separately mimeographed for each individual project, and following the outline of the construction and equipment schedule mentioned earlier in this article as the starting point for keeping track of each project.

On this report form, construction and equipment are broken down into the various phases pertinent to the project, and the percentage weightings are shown. For each of these items, the construction superin-

tendent fills in the percentage of completion, using three columns to show the cumulative percentage up to the date of the previous week's report, the accomplishment of the current week, and a new cumulative total. The advantage of this method are two-fold: It reduces to a minimum the possibilities of error which would be inherent in a general estimate of progress based on the superintendent's judgment of overall conditions, and it indicates, definitely and precisely, the particular parts of the program which may require special attention and assistance in respect to the procurement of needed materials.

At the Pittsburgh office, this information is put into summary form. By a simple arithmetical process on a specially prepared computation sheet, using the field superintendent's percentage of progress reported on each item, and the weight factors originally assigned, the weekly progress can be quickly summarized. It is then put into chart form, so that the complete picture can be visualized.

### The System Works

The entire procedure has been simplified to these essentials. It has been constantly kept in mind that the real job of getting deliveries on time is being done by the Regional Coordinators in personal contact with suppliers' plants, and that the function of the central office is to take the first step—getting the information regarding requirements into their hands as soon as the purchase order is issued—and after that, to assist and coordinate their efforts wherever possible in the light of the overall program, but not to duplicate their work. In this respect, it parallels the organization and policy of the purchasing set-up which it is serving in this emergency. The significant test is that it has effectively accomplished its purpose during a period of extraordinarily rapid expansion, when procurement problems generally are more complex than ever before and procurement delays would have shackled the entire project which is vital in the national war effort.

The internal organization of the Coordinator's office is as simple as the procedure. At the head of the division is the Coordinator, sharing an office with the General Superintendent of Plancor Construction. There are two Deputy Coordinators, one in charge of procurement contacts, and one in charge of records. The former has a staff of three Assistant Coordinators—the Pittsburgh contact men for the Regional Coordinators—and two stenographers. The latter has a staff of one draftsman, an assistant, two statisticians, and three clerks. There are, in addition, two administrative assistants and two stenographers working with both the Coordinator and the General Superintendent.

The spirit of the entire organization is typified in a sign hanging in the purchasing office:

THE IMMEDIATE  
*We do right away*  
THE IMPOSSIBLE  
*takes a little longer*

The important result is that, by substituting schedules and coordination for traditional methods of expediting, things are getting done—on time.





## Adjusting Purchasing Practices to

**W**HEN a manufacturing company's plant swings over to 70, 85, 92, and 100% production for winning the war and doubles its force and output, a seasoned Purchasing Agent, whose whole record has been one of taking on added duties and meeting new situations, can develop policies and practices that deliver the required materials on time. That has been proved impressively by study of the 1940-42 experiences of W. H. Hallsteen, Purchasing Agent, Treasurer, Office Manager, Vice-President, and Director of the Ilg Electric Ventilating Co., Chicago.

This progressive concern, whose regular line comprises ventilating fans, blowers, and unit heaters, has changed with the times to meet the new requirements of the shipbuilding program and black-out manufacturing conditions. The war-work adjustments made by Mr. Hallsteen, a leader in the Chicago and National Associations of Purchasing Agents, who drew on them for his initial ideas twenty-five years ago and has been giving ideas to them and drawing on them further ever since, will be specially helpful to others. They give constructive suggestions along twelve lines of action, as follows:

1. Increasing sources of supply from one to four or five for each principal material.
2. Going in early for Production Requirements, or allocation, system, and under it adopting a continuous record plan, and exercising patience and persistence in giving details to government people for revision of allocations.
3. Purchasing new equipment for changed and increased production.
4. Securing suitable substitutes for scarce materials, such as steel, gray iron and plastics for aluminum in various parts of the products.
5. Building enlarged storage space for materials.
6. Adding to personnel of Purchasing Department.
7. Utilizing company's new priorities department, which serves also sales and production departments.
8. Working closely with liaison man in engineering department and inside expeditors in the production departments.
9. Expediting deliveries of materials from suppliers by mail, telephone, telegraph and field work.
10. Participating in over-all coordination through

Monday morning conferences with President and General Manager and Vice-President in Charge of Production.

11. Applying lessons from experiences in last war.

12. Drawing on the idea that "at some time or other every Purchasing Agent should be a salesman, and every salesman a Purchasing Agent."

First the defense and lend-lease programs and then the victory war production program have caused Ilg to increase its total production by leaps and bounds. By the first of the year its output for war purposes had become 92% of the total and by April 1 it was 100%. The factory force, hitherto all men and boys, operating with day and night shifts, all working on an hourly-pay basis, has doubled, from 200 to 400; and the office force, likewise, from 35 to 70. Normal annual sales have more than doubled. Purchases of materials for production run to about 50% of the sales.

While this has not required conversion to production of entirely new products it has demanded adaptation to notable changes in the production of two of its three lines of products—the blowers and the ventilating fans. The company's third line, unit heaters, is entirely cut off, since the copper required for fins and tubes for the heating elements must go to strictly war production.

Even before the restrictions on materials were made mandatory by WPB, and before the production on consumers' goods was halted, Ilg designers had made considerable progress in substitution. The remaining finished stock of small fans for kitchens and offices shows gray iron and plastics used in place of aluminum in the grille, motor frame, and door. Other changes have been in the nature of adapting previous developments to the new conditions. For example, a dark-room ventilator, normally used in photography to prevent leakage of light while providing complete interior ventilation, has now "grown up" to give similar effective service for complete plants that must continue their operations during black-outs.

For greater safety in use, some parts previously made of cast iron are now fabricated of steel castings and welded plates, which might bend under the impact of an explosion but would be less likely to shatter and send pieces flying in all directions. Such a change in-

**How a seasoned purchasing executive has geared his department to handle the problems of doubled output and conversion of company products to wartime purposes.**

By **HERBERT E. FLEMING**

volves not only the purchase of different materials, but arc welding machines and other equipment. Then there are changes in production ratios, such as the prevalent use of DC motors on marine equipment, whereas in a normal peacetime manufacturing program 98% of the motors in a run would be AC. Ilg has always taken

figures. Motor commutators, condensers, carbon brushes, transformers, and ball bearings, are involved in the purchases for making the Ilg motors in the blower and fan assemblies. Other purchases include acetylene, oxygen, baking varnishes, paints and lacquers, wooden packing boxes, and fuel oil, that last

## WAR PRODUCTION Requirements

pride in the point that its products are made under a "one-name-plate guarantee," and its motor manufacture has been a conspicuous feature of its operations; consequently this switch has involved the enlarging of the punch press department and the purchase of many additional machines including shears, drills, and lathes.

The factory departments involved in this Ilg production, for which the Purchasing Department has to supply equipment and materials, are: motor winding, motor assembly, machine shop, tool and die, sheet metal, punch press, blower, assembly, testing and inspection, receiving, raw stock room, finished stock room, motor and assembled parts, shipping.

The list of machines, materials, and supplies which Mr. Hallsteen purchases, to go into Ilg products and maintenance repair and operation of the plant, is varied. The machinery, the dies, tools, and jigs, and the drills, taps, files, screws and miscellaneous mill supplies run into substantial amounts.

Among the materials steel is bought chiefly in carload lots whenever conditions permit. Approximately 35 carloads from the mills are ordered in a year, and an additional equal amount of steel is picked up in Chicago warehouses. The steel and iron purchases include: steel castings, hot rolled sheet steel, malleable castings, cold rolled bar iron, and gray iron castings. Aluminum castings are also purchased when available. Copper—rod and magnet wire, strips, tubes, scrap, and castings—headed one of the Ilg allocation lists.

On the castings of the various metals—steel, iron, aluminum, copper—the annual tonnage runs into four

named item being approximately 20 carloads a year.

The demand on Mr. Hallsteen to buy all these materials and get them in on schedule for production, has been like the sound of battle to an old warhorse. In World War I he had won out in the establishment of a centralized Purchasing Department in the Ilg organization to overcome confusion in its production at a time when no Ilg man was permitted to enlist in the armed services because every one of them was needed on its production of ventilating systems for battleships. That included the blowers for the Arizona, damaged through the Japanese treachery at Pearl Harbor.

When the company had swung into its stride of production for the world-wide war of today, John M. Frank, President, took to the plant from his home attic a collection of the posters used in 1917, including the stirring ones headed, "Teamwork Builds Ships," "On the Job to Victory," and "Together We Win."

These were hung on a wall of the company cafeteria, for which, incidentally, Hallsteen has done the purchasing of food and supplies since the day it was established, when there was no restaurant in the vicinity of the plant in the prairie on the "Northwest Side" of Chicago.

The twelve points of adapting purchasing policies and practices to meet today's demand summarized at the beginning of this article are the outstanding features of the program through which the company is meeting the demands of the present emergency.

Here are some details on each of the twelve:

1. *Increasing Sources of Supply.* "A policy change which we have adopted for



**Walter H. Hallsteen**

Purchase Requisitions are made out in the stores or production departments, and require the approval of the department head and the Director of Purchases before going to the Assistant Purchasing Agent for placement of the order.

The Purchase Order is normally a five part form, with copies for the vendor, acknowledgment, Purchasing Department work copy (ruled on the back for record of shipments), Material (Production and Cost) Department, and Receiving Room.

OPM (or WPB) Information is an extra copy of the purchase order used under present conditions for use in keeping records on priority inventory. Another duplicate copy for today's needs is made on light-weight paper for government inspection purposes.

Daily Receiving Copy is used to keep track of incoming shipments. A special form for motor receipts provides a record of serial numbers and specifications on such equipment.

Pattern Record Ticket keeps track of patterns when taken from the pattern stock room or transferred from one foundry to another.

Notice of Shipment notifies the production department of shipments of outside material made directly to the customer.

Rejection Notice provides a record for purchasing, production, and stores departments in the case of materials returned for failure to meet company standards, in case of error, or for any other reason.

ILG FORM NO. 2, REV. 7-41

## PURCHASE REQUISITION

REQ. NO. 23663

DATE	TO BE USED FOR	DATE WANTED	PRICE

QUANTITY

DESCRIPTION

---

ILG FORM NO. 3, 10-12-40

## ORIGINAL PURCHASE ORDER

### ILG ELECTRIC VENTILATING COMPANY

Mfrs. of Ventilating and Air Conditioning Apparatus, Unit Heaters  
2850 N. CRAWFORD AVE.  
IRVING PARK STATION  
TELEPHONE KILDARE 1245  
Chicago, Ill.

No. 19698  
PUT THIS PURCHASE NUMBER ON INVOICES AND ALL PACKAGES

NO DELIVERIES WILL BE ACCEPTED AFTER 2:00 P. M. NO SATURDAY DELIVERY

ANY "WILL ADVISE" ORDERS SHOULD NOT BE PUT IN THE FACTORY FOR MANUFACTURE UNTIL RELEASED BY US. IF YOU DO, IT IS AT YOUR OWN RISK.

INVOICE IN DUPLICATE

ACK. NO.	SHIP WHEN	JOB NO.	DESCRIPTION	CHARGE	REQ. NO.	PRICE

---

O. P. M. INFORMATION

## ILG ELECTRIC VENTILATING COMPANY

### DAILY RECEIVING COPY

DEPT. \_\_\_\_\_

JOB NO. \_\_\_\_\_

REC'D FROM \_\_\_\_\_

P. O. NO.	REQ. NO.	QUANTITY	ARTICLE	DATE	WEIGHT
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

---

Form 41, 1M, 1-40

## PATTERN RECORD

### ILG ELECTRIC VENTILATING CO.

2850 N. Crawford Ave.  
CHICAGO, ILL.

Date \_\_\_\_\_

DELIVERED TO \_\_\_\_\_

DELIVERED FROM \_\_\_\_\_

Part No.	Place	Made at	Core Shop	Made at	DESCRIPTION

---

ILG No. 97, 1M, 2-42

## Notice of Shipment to Production Department

Date \_\_\_\_\_

Req. No. \_\_\_\_\_

G. O. No. \_\_\_\_\_

Date Shipped \_\_\_\_\_

Via \_\_\_\_\_

---

ILG ELECTRIC VENTILATING CO.

## REJECTION NOTICE TO PURCHASING DEPARTMENT

No. 7701

Date \_\_\_\_\_

Article \_\_\_\_\_

Purchased from \_\_\_\_\_

Rejection \_\_\_\_\_

P. O. No. \_\_\_\_\_

ITEMS AND REASONS

Total Rejected \_\_\_\_\_

Location \_\_\_\_\_

Chief Inspector \_\_\_\_\_



war production is to have more suppliers of each principal item, such as castings, copper, and sheet steel," said Mr. Hallsteen. "We used to place about all orders with one supplier for each of those materials. Now we split each order up among several. We buy from four or five foundries, four or five suppliers of copper, and four or five steel mills." When asked if he had experienced any difficulty in finding new sources of supply without the benefit of earlier associations with the suppliers concerned, he stated that this was the case, but that the company's high priorities on war work helped a lot.

2. *Securing Allocations Under the Production Requirements Plan.* Mr. Hallsteen was among the first of those purchasing agents who saw the favorable possibilities of the allocation plan for controlling the distribution of materials. He got going under it in September, 1941, shortly after it was started by the OPM, and has the advantage of this experience now that PRP has been extended to general use for all manufacturers. The contacts are through the WPB Industrial and Office Machinery Branch, Fan and Blower Section. Through this plan Ilg originally got allocations for the three months' supplies of materials on five items. Asked for any lessons for Purchasing Agents out of his experiences with the allocation plan, Mr. Hallsteen said:

"One is to keep a running record on the material under each allocation, like a perpetual inventory. Another is to go after revisions patiently, with details. The WPB local representative in Chicago or any other city can help you get organized, but you have to be prepared to write and to go to Washington to get the allocations. The men there are open-minded, and want you to get what you need. Why, on aluminum sheet steel our first figure on estimated requirements was increased by the Division. But if you get a goose-egg in that last column where they enter the allocations, as we did on materials for motors for blowers, it's because they don't understand; they can't understand everything. On those motors they didn't realize that we didn't want to sell them separately but had to have them for completing the assembly of the blowers. As soon as they un-

derstood that a blower without a motor would be no blower they of course gave us a good figure in place of that goose-egg. So the Purchasing Agent has to make the details clear by writing letters and by following them up with oral presentations at the capital."

3. *Purchasing New Equipment.* The changes in specifications, calling for welding instead of casting, and for DC instead of AC motors, required the enlarging of the punch press department and the purchase of much more than the usual amount of new machines and small tools. In buying a large circle-cutter Mr. Hallsteen traded in a smaller one, thus saving some money and at the same time making it possible for someone to keep the small one in war production. In purchasing other machines he had demonstrations given by as many as four companies, some in the Ilg plant and others in nearby plants. "If a foreman says, 'Get a given mate of machine, say a turret lathe,' I offer him a choice among others that may look good, but I never force the issue," said this experienced Purchasing Agent. "Because if you give a foreman a machine he is not for, it won't work, however good it may be. The demonstrations of competing machines often give foremen new light on their own needs."

4. *Securing Substitutes for Scarce Materials.* In getting substitutes for the critical materials, such as substituting grey iron, steel or plastics for aluminum for which no priorities were obtainable, the Ilg Purchasing Department has the guidance of the company's highly developed Engineering Department. The specifications written by the engineers and their statements as to possibilities and limitations are followed closely. This is facilitated by the fact that W. H. Rietz, Vice-President in Charge of Production, and Mr. Hallsteen, both graduate engineers, were in their student days

**MONDAY MORNING CONFERENCE** • Problems of Management, Production and Purchasing are regularly settled at these weekly conferences. Left to right: W. H. Rietz, Vice President in Charge of Production and Engineering; John M. Frank, President and General Manager; W. H. Hallsteen, Director of Purchases, Vice President, Treasurer, and Office Manager. A scale diagram of the plant, with templates showing machine layout, is helpful in making decisions.



classmates at the Armour Institute of Technology.

5. *Building a Storage Addition.* Besides having a finished-stock room, and a room for stocking frames and motors of different horse-power to be assembled with them, Ilg has a large raw-stock room, with bins and shelves in excellent order. But this, in view of doubled production, is not sufficient. So, in order to get inventory of raw material ahead consistently, new construction is going on at the west of the plant. Letting the contract for this and following up the construction has been one of Mr. Hallsteen's duties.

6. *Adding to the Personnel of the Purchasing Department.* With more orders to write, priorities to watch, and expediting to be done, due to the doubling of demand in war time, Mr. Hallsteen has added three to the force in the Ilg Purchasing Department, raising its total to seven of whom four are men. Since Mr. Hallsteen, besides being Purchasing Agent, Treasurer, and Vice-President, is Office Manager, he personally hires all the office personnel. The Purchasing Department group is at desks beyond a railing immediately opposite the door of his office. This group is under the immediate supervision of Silvain Heyerick, Assistant Purchasing Agent. Purchasing Agent Hallsteen, besides himself handling the larger equipment and materials purchases and placing all contracts, passes on all requisitions from the plant for purchases. Mr. Heyerick sees that the orders are properly edited and written. He also interviews all salesmen on small tools and supplies.

7. *Utilizing the Company's Priorities Department.* Ilg is one of the companies which has established a separate priorities department. It has a force of three, headed by Lloyd Steele, who was employed to be comptroller but has been kept busy on priority matters, for the time being. This department serves the sales department, to see that the customers have proper preference rating certificates, and the production department, in scheduling. It works very closely with the Purchasing Department.

8. *Working with Engineering and Production Liaison Men.* The Ilg Purchasing Department also gets much help, specifically on manufacturing operations, from a member of the Engineering Department, whose staff is situated in space immediately above the enlarged punch press department and adjoining the offices. This member is R. Pfautsch, a mechani-

cal engineer, under Mr. Rietz. But in wartime one of his principal duties is to give information to Mr. Hallsteen and assistants in the Purchasing Department. Likewise there is under each forman a shop expeditor who sends orders on materials to the Purchasing Department, and particularly gives it reports on the respective materials urgently needed. By working closely with these men, the Purchasing Department is in good position for its contacts with the sources of supply.

9. *Expediting Deliveries from Suppliers.* As every Purchasing Agent knows, expediting today is of paramount importance. For after an order is placed, it is no good unless you get deliveries. This expediting for Ilg is a definite responsibility of Mr. Hallsteen's as Purchasing Agent. The expediting from office desks by members of his department is done, without special forms, in the customary ways by letter-writing, telegraphing, and telephoning—local and long-distance. There was recently added to the purchasing staff as expeditor R. A. Steimert, formerly an automobile salesman. But Mr. Hallsteen spends a goodly portion of his own time seeing that the material on order gets into the plant. And for this reason he makes frequent trips to the out of town suppliers' plants.

10. *Participating in Management Co-ordination.* One of the Ilg practices which makes for good timing and close coordination of activities as between sales, production, purchasing, and financing is a conference held every Monday morning. This is attended by Mr. Frank, President and General Manager, Mr. Rietz, Vice-President in Charge of Production and Engineering, and Mr. Hallsteen, primarily as Purchasing Agent,

but also as Office Manager, Treasurer, and Vice-President. All three are directors of the company. At these conferences, for example in reference to the purchase of a list of new tools aggregating \$50,000 estimated cost, Mr. Hallsteen as Dr. Jekyll Purchasing Agent had to convince that other fellow Mr. Hallsteen as Mr. Hyde, Treasurer, before making recommendations.

11. *Applying Experiences from World War I.* While the transformation of the nation's industry from civilian to war production has been much more nearly complete in this war than in that of twenty-five years ago, Ilg experiences at that time have been helpful in today's buying. Mr. Hallsteen started his purchasing work then, and has had a

(Continued on page 166)



Symbolic Mural in ILG Lobby

An unusual mural symbolizing the service performed by a manufacturer's products, in this case ventilating fans, blowers, and unit heaters, catches the eye of a visitor entering the lobby of the plant and general offices of the Ilg Electric Ventilating Co., Chicago. The artist who created it, Edward Buk Ulreich, says:

"Like the Statue of Liberty in New York Harbor, the mural in the Ilg lobby is symbolic of ideas, and is in nowise intended to convey a scenic representation as a camera sees things. The movement of clean fresh wind, the sunshine, the freedom of bird and fish, the air-filled sails as the ship sets out to sea, four figures symbolizing the four winds—the masculine vigor of the east and the north wind, the feminine gentleness of the south and the west wind—all of these are an expression of the elements particularly pertaining to the reasons for, and the purpose of, the Ilg products.

"In the painting itself I have used ideas which have always been associated with all that is pure, beautiful and free. The clouds, windmill and full-rigged ship of course suggest the movement of air, while the horse, doe and dog are an expression of life and animation as a result of fresh air. The traditional freedom of the eagle is dependent wholly upon the air in which he moves. The rippling water and blowing grass indicate the wind in its movement."

# We MIMEOGRAPH our Purchase Orders

**This simple system, devised to handle a complicated problem of procurement, has eliminated a clerical bottleneck, provided better copies, avoided errors, and reduced the cost per order from 83 to 18 cents.**

**By A. M. Davis\***

**"FROM** field to factory to finished motor in 243 days," is the way we like to sum up the job our company has done in setting up a brand new plant for manufacturing bomber engines. Ground was broken for this new plant on March 17, 1941. By September we had begun our first machining operations, and the first finished motor rolled off the line a few months later. When we celebrated our first anniversary in March we were already far ahead of our anticipated production schedule. At present our production on bomber engines is rushing ahead at a rate which, last July, we did not expect to attain until a year from now.

Getting this plant built and equipped for production in record time represents a new kind of purchasing. Ordinarily when a man sets out to manufacture any product, he begins in a small way—probably starting out in a one-room shop. As the orders come in faster he adds a couple of rooms and hires a few helpers. The business grows gradually, and tools and equipment are purchased as they are needed. But building this plant of ours was a different story. Everything had to be started from scratch, and everything had to be ready at once, at least to the extent that production could be started.

Under the direction of J. G. Hammond, Manufacturing Manager, two divisions were set up. One, the Plant Engineering Department, working closely with the architects, was concerned with getting the buildings built, and equipping them with electrical and sanitary facilities, power house, power plant, and so on—in short, this department was occupied with providing the non-productive equipment and facilities.

A second department, the Master Mechanics Divi-

sion, was set up to handle specifications and purchasing of all the tools, dies, and other equipment needed for productive activity. Naturally, this division was also concerned in some degree with building specifications, in order to assure perfect coordination between the machines purchased and the facilities provided for the operation of them. In addition to the usual office and factory furniture and standard equipment, we set out to purchase fixtures, gauges, lathes, presses, milling machines, heat treat furnaces, benches, stock bins, stock handling tracks, tractors, electric motors, dynamometers, conveyors, and thousands of similar pieces. You can get some idea of the size of the job: we have already purchased over 60,000 gauges alone.

Of course, every one of these tools and machines must be purchased according to specifications. In our plant we have fifty Process Engineers who work constantly to turn out the original Machine Order Specification Sheets used in purchasing our equipment. In addition, we have at our services from 200 to 300 Process Engineers who are employed by our suppliers. In some cases, we can hand a blue print to a supplier and say, "Here, go ahead and make this jig." But in others we must provide exact specifications as worked out by our own Process Engineers. To give you some idea of the volume of this work, I might say that there are approximately 7,000 parts in one engine—counting such parts as the carburetor as one each, although as a matter of fact there are six or seven hundred parts in the carburetor alone. We have to provide a Machine Order Specification Sheet for *every operation on every one of these parts*. Furthermore, every Machine Order Specification Sheet must be approved by the representative of the Defense Plant Corporation stationed in our plant, before we can go ahead with the buying.

Needless to say, an enormous amount of paper work is involved in all this purchasing. In addition to the

\* Mr. Davis is Assistant to the Manufacturing Manager of a new plant now producing aircraft engines under the management of a well known automobile manufacturing company.



P. O. NO. G. W. O. NO. MACH. NO.			
PLANCOR DATE F. O. B. TERMS SHIP VIA DELIVERY DATE			
SHIP TO <span style="background-color: black; color: black;">XXXXXXXXXX</span> FURNISH AS PER YOUR QUOTATION NO.			
QUAN.	OUR NUMBER	DESCRIPTION	PRICE
EXTRA MACHINE ATTACHMENTS			
ELECTRIC MOTORS - ALL MOTORS TO BE 440V. 3 PHASE 60C. AC. WITH BALL BEARINGS SLEEVE BEARINGS			
QUAN.	OUR NUMBER	H. P. R. P. M. Open or Closed	MAKE WILL FURNISH Installed Where
		SIZE	TYPE CONTROLS DISCONNECTING SWITCH TO BE IN OR AHEAD OF ALL STARTERS
TOOLING FOR ABOVE MACHINE SEE P. O.			TOTAL
INSTALLATION MAT.		INSTALLATION LABOR	
INSTALLATION BY FACT.		DEPT.	
ELECTRICAL EQUIP. APPROVED BY		TOTAL INSTALLATION	
REQ. BY		FREIGHT	
APP. BY		TOTAL COST	
CHARGE { ACCT. DEPT.		TO BE USED FOR	
APPROVED FOR DEFENSE PLANT CORPORATION		OUR MODEL NO.	
		OPERATION NAME	
		PART NO. OPER. NO. PART NAME FACT. NO. DEPT. NO.	
		DELIVER TO	
		ORDERED BY	
		DATE	
		APPROVED	
		APPROVED	
FIXTURES AND (1) COMPLETE SET OF TOOLS		P. O. NO. G. W. O. NO.	
		TOTAL	
EXTRA PERISHABLE TOOLS		P. O. NO. G. W. O. NO.	
		TOTAL	
IMPORTANT: TOOL LAYOUTS AND DETAIL DRAWINGS MUST BE FURNISHED <span style="background-color: black; color: black;">XXXXXXXXXX</span> IMMEDIATELY			

3.  
This "Price Section" is blocked out after all Purchase Order copies have been duplicated, and before the Follow-Up Department copies are run.

2.  
This "Installation Data" section is blocked out after the first twelve copies of the Purchase Order have been duplicated.

1.  
This "Tool Data" section is blocked out after the four copies of the Machine Order Specification Sheet have been duplicated.

Machine Order Specification Sheet, two other forms are required: a General Work Order, containing much the same information, and a Purchase Order.

We need four copies of the Machine Order Specifications. One copy is retained by the Process Engineer who prepared the original, one copy is sent to the vendor, one copy to the Electricians Department of the Works Engineer's Division, and one copy to the Order Department for follow up purposes.

Four copies are also required of the General Work Order, which includes data for installing the equipment after it is received. Two of these copies are retained by the Order Department, one is sent to the Accounting Department, and one is sent to the Superintendent of the Burden Center charged.

Fifteen copies are required of the Purchase Order. Their distribution is as follows:

- 1 copy to the Follow-up Department
- 1 copy to the Receiving Department
- 1 copy to the General Accounting Department
- 6 copies to the Factory Accounting Department  
(Five of these copies are kept for filing.)

- 1 copy to the Stores Department for follow-up
- 1 copy to the Order Department
- 3 copies to the Defense Plant Corporation
- 1 copy to the Vendor

After working out three different printed forms—Machine Order Specification Sheet, General Work Order, and Purchase Order—we originally set twelve typists to work typing and filling them in, using multiple carbons and following the data prepared by the Process Engineers.

It was soon apparent, however, that this arrangement was not going to get the orders out fast enough. Our twelve typists could not begin to cope with the volume of specification sheets that the engineers were turning out. We considered purchasing additional typewriters and hiring additional typists, but it looked doubtful whether even then we would be able to keep up with the Process Engineering Department. We simply could not afford to get behind in these orders if we were to get our plant equipped and production under way according to the schedule we had set ourselves to accomplish.

There were some other important disadvantages—not the least of which was the confusion in typing. Usually the Machine Order Specification Sheet was typed at one desk, the General Work Order at another, and the Purchase Order at still another. This resulted in having papers scattered all over the office, and it was a job to get the sets assembled properly. Then, too, with three different typists preparing the forms, we had three different interpretations of the original data as prepared by the Process Engineers. The three forms in each set had to be checked against each other, and too often we found that they were not correct. Still another difficulty was the fact that the eighth, ninth, and tenth carbon copies were likely to be so blurred that it was difficult to read them. This involved a good deal of checking and re-checking after the copies had been sent to the various departments.

After some experimenting with various methods, we decided to use a mimeograph duplicator to produce the various copies needed of these orders. A careful study of the three forms showed that certain information was common to all of them, although each varied somewhat from the others. For instance, the data on fixtures and tools was needed on the Machine Order Specification Sheet, but not on the General Work Order or the Purchase Order. Again, the data covering installation instructions was needed on the Machine Order Specification Sheet, the General Work Order, and on certain—but not all—copies of the Purchase Order. After a good deal of study I devised a composite form that would cover all three forms, using the Machine Order Specification Sheet as a basis. We arranged to have this form die-impressed on mimeograph stencil sheets, legal size, so that the stencils came to us with the form already stencilized on them. All that is necessary is to fill in the form on the typewriter, and run the twenty-three copies we need.

We devised three simple printed letterheads on which to run the three forms. They are legal size sheets for the Machine Order Specifications and the General Work Order, and letter size sheets for the Purchase Order, with our company name and the title of the form printed in black in rather small type at the top center of the page. In the top left corner is printed the name of the department to receive that particular copy. This information is printed in different colors, according to the various departments which should receive copies. For example, of the four copies of the

## HERE'S HOW IT WORKS

**Fill in the complete stencilized form, 8½ x 14, on the typewriter.**

Run off four copies of the complete stencil on 8½ x 14 sheets, color-printed for identification and distribution, to provide 4 copies of Machine Order Specification Sheet.

**Block out "Tool Data" section at bottom of stencil.**

Run off four copies on 8½ x 14 sheets with cost record form printed on bottom three inches of sheet, to provide 4 copies of the General Work Order.

Run off twelve copies on 8½ x 11 sheets, printed with company heading and with "Terms and Conditions of Sale" printed on the reverse side, to provide 12 Purchase Order copies for internal plant use.

**Block out "Installation Data" section.**

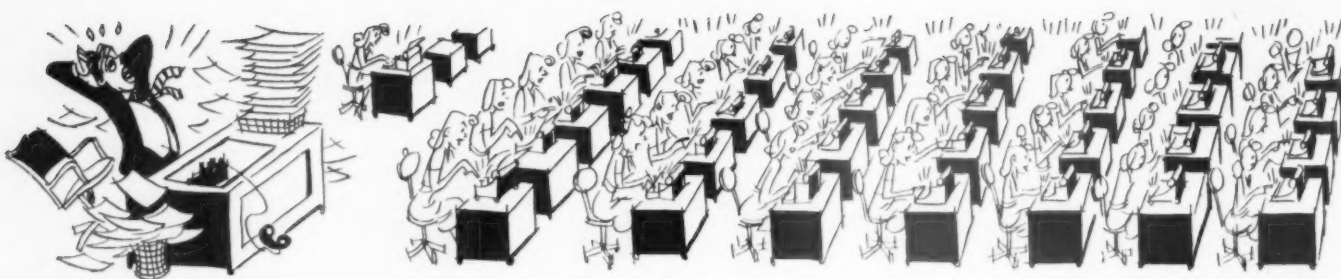
Run off three copies on 8½ x 11 sheets, printed as above and with "Instructions to Vendor" printed on bottom 2½ inches of sheet, to provide 3 Purchase Order copies for Vendor and DPC.

**Block out "Price" section at right hand of stencil.**

Run off twelve copies on plain 8½ x 11 sheets punched for standard ring binder, to provide 12 Follow-Up copies of Purchase Order.

### Result:

35 needed copies, with the assurance of identical text and no weak multiple carbons, produced from a single typing operation.



## BEFORE ↑

Machine Order Specification Sheet, the copy intended for the Order Department has the words "Order Department" printed in black; the copy for the Vendor has the word "Vendor" printed in green; the copy for the Process Engineer has "Process Engineer" printed in red; and the copy for the Electric Division has "Electric Division" printed in blue. These letterheads, when fed into the mimeograph duplicator in the proper order, resulted in copies that not only included the desired data, but also complete identification as to its function and distribution.

In order to provide for the difference between the three forms, we arranged the data so that parts of the stencil could be blocked out progressively. Because the Tool data was needed only on the Machine Order Specification Sheets, we placed this section at the bottom. Now, after the four copies of the Machine Order Specification Sheets are run, we place a piece of absorbent paper over the lower part of the stencil, so that succeeding copies will not include that data. Next, we run the four copies required of the General Work Order. The duplicating area of this form is only 8½x11 inches, or standard letter size, but our letterheads were made legal size so that we could print a Cost Record form across the bottom, in the space that, on the Machine Order Specification Sheet, was occupied by Tool data. These Cost Record forms are used by the Accounting Department.

Next, we run the first twelve copies of the Purchase Order. Our letterheads for this form are letter size (8½x11") and have "Terms and Conditions of Sale" printed on the reverse side. Since these twelve Purchase Order copies are used within the plant, the installation data is included. On the last three copies, however, this installation data is blocked off. Two of these copies are sent to the Defense Plant Corporation, and one goes to the Vendor. "Instructions to Vendor" are printed across the bottom of these three copies, this printed material occupying the space which,

on the first twelve copies of the Purchase Order, was occupied by installation data.

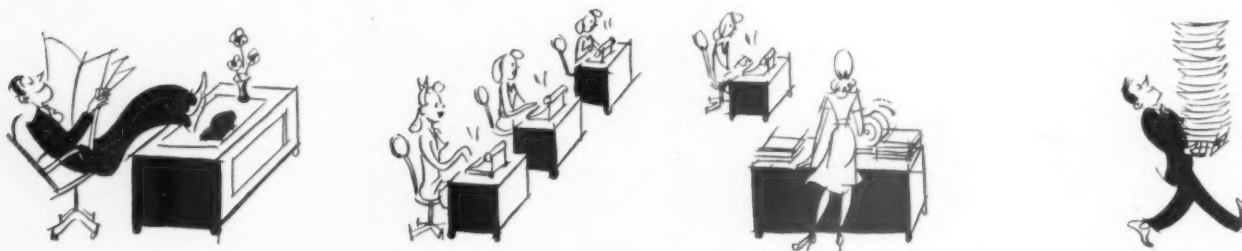
Once this system of mimeograph duplicating the orders was in effect, we found that it would be advantageous to provide additional copies of the Purchase Order for use in the Follow-Up Department. For these copies, which are run on plain, letter-size paper, punched for a standard three-ring binder, we also block out the "Price" section at the right side of the form. The number of follow-up copies required is determined by the product being purchased; twelve copies are needed in the case of machinery and machine attachments, but only two in the case of tools, furniture and equipment.

We found it advisable, a little later, to add two additional die-impressed stencil forms to this system. One is a form similar to the three-purpose form just described, but somewhat simpler. It is used for ordering smaller tools, as distinguisher from large pieces of machinery. Its preparation and distribution are almost exactly like that of the original form. The other form we adopted is an Alteration Purchase Order. It sometimes happens that when the order for a certain machine is put through, we may not yet have the price of it. To get the order started, so as to assure delivery as soon as possible, we put through out regular three-fold form. Later, when the price is available, we fill out the Alteration Purchase Order. It is distributed to the same departments that received the original Purchase Order.

The logical question that will arise at this time is that of cost. Of course, in setting up a plant like ours, in today's wartime emergency, cost is a secondary factor to speed and efficiency—but nevertheless we made a very careful cost analysis before we adopted this method. It is our expectation that when we are thoroughly underway in this work of purchasing machines and tools, we will be putting through about 190 sets of orders each day. Basing our time study on a 20-day month, we estimated that, using our old method of typing with multiple copies, it would require thirty-two typists to produce the 3,840 sets of orders we intended to put through in this period, at a cost of 83 cents per set. Our time study showed that, using our present system of mimeograph duplicating the orders, we could do the same job using only six typists and

*Continued on page 164*

## AFTER ↓





# "END-USE"

## Now Determines Allocation of Materials

**I**N order to trace the flow of materials in terms of the products in which they are used, from primary producers to finished products, and thus to be sure that materials are channeled into those applications most vital to the national interest, the Division of Industry Operations, War Production Board, has announced the new Allocation Classification, popularly known as the "End-Use Code". It will provide the information needed by WPB for such allocations, and at the same time it constitutes a simplification of method since it supersedes a variety of use classifications heretofore required under Materials ("M") Orders and standardizes the various rules and forms that industry must submit to WPB.

Allocation Classification symbols must be used on all orders placed by manufacturers, fabricators, primary producers, etc., after June 30, 1942, and must also be furnished for existing orders that have been placed for delivery after July 31, 1942. Purchases at retail and purchases by retailers are not included in the requirement, but industrial and mill supply houses, warehouses, and businesses performing similar functions for industry do come within the system.

The Allocation Classification also applies to all applications under the Production Requirements Plan for the fourth quarter of the year, and such applications must identify the end-use of materials requested. The symbols will thus become a principal method of checking the requirements and distribution of materials for war and for essential civilian purposes.

The system itself is comparatively simple. Twenty-three major classifications of military, industrial and civilian uses have been set up, as follows:

### MILITARY

- Class 1.00—Aircraft, Production and Maintenance
- Class 2.00—Ships, Production and Maintenance
- Class 3.00—Vehicles, Production and Maintenance
- Class 4.00—Armament and Weapons, Production and Maintenance
- Class 5.00—Ammunition, Production and Maintenance
- Class 6.00—War Equipment and Supplies, Production and Maintenance
- Class 7.00—War Facilities, Construction and/or Maintenance

### INDUSTRIAL AND CIVILIAN

- Class 8.00—Raw Materials, Production and Processing of
- Class 9.00—Power, Light, and Heat
- Class 10.00—Transportation
- Class 11.00—Communication
- Class 12.00—Public Health and Safety
- Class 13.00—Agricultural Equipment and Supplies
- Class 14.00—Industrial Food Processing
- Class 15.00—Wearing Apparel
- Class 16.00—Equipment and Supplies for Household Use
- Class 17.00—Education and Information
- Class 18.00—Recreation and Amusement

Class 19.00—Equipment and Supplies for Office Use

Class 20.00—Machinery and Equipment and Industrial Use

Class 21.00—New Buildings, Construction of

Class 22.00—Operating Supplies and Building Repair and Maintenance

Class 23.00—All other End Uses.

By means of a decimal classification, this list is further subdivided. For example, under Class 9.00 (Power, Light, and Heat) are 9.10 (Electricity), 9.20 (Petroleum), 9.30 (Coal and Coke), and 9.40 (Gas).

In addition to this numerical designation, each order must carry an alphabetical symbol as a prefix, known as the Purchasers' Symbol, indicating by what type of purchaser the order is placed. To date, only five such symbols have been assigned, but it is expected that this will be extended in somewhat greater details. The present code is:

<i>Purchaser</i>	<i>Symbol</i>
The Army	USA
The Navy (includes the Maritime Commission)	USN
Lend-Lease	LL
Other Foreign Purchasers	FP
Domestic Purchasers	DP

Neither the classification number nor the symbol is intended to indicate the order of importance of any given purchase. Their purpose is threefold:

- (1) To identify the subdivision of the program for which the products or materials ordered are destined.
- (2) To identify the type of the ultimate purchaser of the product.
- (3) To transmit such identifications on down through industry to the original suppliers of the material.

So far as practicable, where end-use can be traced, the classification symbol is extended to all purchases which will eventually find their application for that purpose. For example, a storage battery manufacturer ordering materials to be used in storage batteries for automobiles, will use the symbol for automobiles (10.20) on his purchase orders. When a purchased item can be traced to two or more Allocation Classifications, all the appropriate symbols are shown, with a percentage figure for each based on the dollar sales volume of the latest available month, but prorating any such division which amounts to less than 5% of the total business.

Similarly a company whose product falls into two or more Allocation Classifications, but which maintains a single inventory of materials, should show both symbols on its orders, with a percentage division based on sales. For example, a company making household furniture and office furniture, might mark its orders: "16.00—60%, 19.00—40%".

Information obtained by the use of these symbols will make possible a more accurate and effective allocation of materials to war requirements and to the maintenance of essential civilian industries such as transportation, electric power, health supplies, communications, and the like.

**M**UCH has been written about guayule, some of it contradictory, some of it vague and inconclusive, and practically all of it too general to be of real benefit to the industrial Purchasing Agent who is trying to plan his buying throughout the trying times to come.

Most of what we have been told leads simply to the question: "Okay, America can now produce guayule; guayule makes good rubber, and maybe it will solve our supply problem—but when do we get some and how much will it cost?"

There is now enough experience to provide concrete information on commercial production of guayule, and to suggest a program for development of this rubber plant in order to prevent disastrous rubber shortages in the future. Here are the facts:

1. Large-scale production of guayule is now under way in the United States, but you need not expect any help from it in 1943, and perhaps none in 1944.
2. During 1944, guayule will begin to augment the government stockpile.
3. In 1945, if the government decides to harvest the main guayule crop, industry will receive 18,000 tons of refined rubber from it. If the government decides to wait until 1947 before harvesting, industry will get 37,000 to 45,000 tons at that time.
4. Under the law establishing the government guayule program, 45,000 tons is the maximum amount of rubber which can be produced in a year. However, if greater expansion than that now planned is authorized, the year 1947 can bring 213,000 tons to industry.
5. The price is entirely up to the government; it will be set arbitrarily. But guayule rubber can be produced for 15 cents a pound, not including the initial cost of launching the project. Government experts have advocated setting the price at 20 cents and keeping it there; in any event, it is logical to assume that it will not exceed 22 cents.
6. The brighter side of the picture is that guayule rubber is entirely satisfactory for all industrial and consumer uses, being 90% as efficient as plantation rubber, and somewhat more efficient in most applications than synthetic rubber.

# GUAYULE RUBBER . . . . .

By I. C. FUEHR

During the spring of this year, the United States government bought and took over the operation of the plant, patents, and land of the Intercontinental Rubber Company at Salinas, California, the only guayule growing and milling firm in the country. Under the direction of the Forest Service, the Guayule Emergency Rubber Project planted 23,000 pounds of guayule seed, which was the total supply received from the Intercontinental Rubber Company. This seed was put into nursery stock covering 1000 acres, the seedlings from which will plant 60,000 to 75,000 acres of guayule in 1943. Each acre should yield 1237 pounds of refined rubber.

These figures are based on the planting procedures and harvesting cycles established by the Intercontinental Rubber Company. By sowing the seed broadcast and harvesting at the end of a year, Dr. David H. Spence, of Leland Stanford University, estimates that industry could obtain more rubber in shorter time and at lower cost. But the Spence plan has, so far, not been generally accepted.

That sounds like a lot, but the most serious mistake of the guayule optimists has been to regard the Mexican shrub as a miracle plant, a sort of Jack's bean stalk which will produce rubber overnight. Actually, according to researchers of the Intercontinental Rubber Company, best results are obtained when the plant is

**Planting is done in seed beds, before setting the plants out in the fields.**



# is 3 YEARS AWAY

**The government project in California indicates good commercial possibilities in a long range rubber program, but little immediate relief**

allowed to stand four to seven years before being cut.

Whether we will be thrifty and wait for the plant to reach the point of its maximum yield, or whether the government will consider it wiser to harvest earlier in spite of smaller returns, is an open question. Nobody knows the answer, not even the men in charge of the project.

Some forecasters have overlooked the fact that the guayule plant does not simply pour latex into the hands of the harvesters. It does not run with sap like the Para rubber tree; it is a dry, hard, little bush which has to be ground into pulp before its rubber content can be extracted. Thus, before guayule rubber production can ever approach the point of adequate supply to American industry, many mills will have to be built and properly equipped.

**Procurement problem: to find milling stones equal to these from Norway.**

Rubber is extracted from the root and branches of the guayule shrub. The entire plant is uprooted, dried and crushed. The rubber comes out much the same as cider is extracted from apples.

All of the mash, or pulp, of the crushed plants, is then immersed in enormous vats of water. There the wood in the guayule sinks to the bottom, while the rubber and cork from the bark of the shrub rise to the top and are skimmed off.

The next step is to force water, under pressure, into the air holes of the cork, so that the cork sinks to the bottom in the next flotation, and the rubber is easily skimmed off. After being washed several times and pressed into 100-pound slabs, guayule is ready for use.

Separated in this manner, guayule rubber has only one difference from plantation rubber: guayule contains 20% resin and plantation rubber only 4%. In 1925 when the exorbitant price of plantation rubber turned manufacturers to the use of guayule rubber, the removal of the resin was an expensive process costing from seven to eight cents per pound. Now new processes have been developed and new solvents discovered which simplify the removal of resin, so that the cost of deresinating is at present only one cent per pound.

Furthermore, the resin found in guayule is of an extremely high grade and much in demand for plastics. And since the plastics industry can use all the resin produced by guayule, the extracted resin may be sold for more than the cost of removing it.

In May, I asked Evan E. Kelley, director of the Guayule Emergency Rubber Project at Salinas, what results buyers might expect from the project in the next few years. His answer left no room for doubt: "The industrial Purchasing Agent cannot expect anything from guayule in the next two years; possibly he can in three." What results 1945 will show depends entirely upon the harvesting policy of the government.

On the other hand, we will receive some help from Mexico, native habitat of the guayule plant. It grows wild on the slopes of northern Mexico, and is harvested by natives. In 1941 imports of wild guayule from Mexico amounted to 6000 tons. This is, of course, a drop in the bucket, in terms of American rubber needs.







**Transplanting and cultivation are highly mechanized.**

In 1942 our Mexican imports will probably reach 10,000 tons and remain at that figure for several years to come.

Now—granted that we will get very little help from guayule during the next few years, what is the point of spending several million dollars on its development at the present time?

That is the crux of the whole problem, and there are two answers. One is that we have no idea how long the war is going to last, and do not know but that guayule will be an industrial life-saver in, say, 1950.

The other is that if our guayule program had started ten years ago and had been expanded at a normal rate, we would not now be suffering the severe rubber shortage which came with the advent of war in the Pacific, and we would be assured of stable rubber supplies in the future, during war or peace.

But that is water over the dam, and the important thing is that we can start now and build toward rubber security for the United States of tomorrow. According to W. B. McCallum, formerly chief botanist for the Intercontinental Rubber Company and now with the government project, the extensive cultivation of guayule will make it possible, with very little difficulty, for the United States to produce at least 25% of our normal rubber needs within our own borders.



**A special harvester bales the plants for milling.**



And McCallum's estimate is probably very conservative. Guayule is now grown only in California, but there are vast acres—millions of acres—of suitable land for rubber production in Arizona, New Mexico, and Texas, and it is quite possible that as cultivation proceeds other districts may be found suitable.

With Mexican imports added to domestic production, the government could then build up a rubber backlog any time it wanted to. It would be insurance against shortage and also against the kind of fluctuation to which rubber prices have been subject in the past. During the first World War, rubber shot up to \$3.00 a pound, and during the 1920's reached \$1.20. Then when the depression struck, rubber dropped to three cents a pound, thus halting the original guayule experiment which was then under way.

Whether we will continue to regard the guayule program as an emergency measure, and use it as such, or whether we eventually turn it into a permanent project so that nothing but an act of God can again cut us off from the rubber we need, remains to be seen. Advocates of the project who suggest liquidation or curtailment of the program as soon as the war is over are short-sighted. Paying a little more for guayule over a long period of years is preferable to depending on a sometimes cheaper but more unstable

source, which may at any time leave the nation high and dry.

Growing guayule in spurts is not only wasteful but silly. And should our supplies be cut off once more, it will take exactly as long at that time for guayule to develop a sizable contribution to our rubber needs as it is taking right now.

At the Hearing of the House Committee on Agriculture, Chairman H. P. Fulmer of South Carolina repeatedly voiced the opinion that the guayule program should not cease at the end of the war. He said: "I am just wondering why, if we can make a success out of this, although at a higher price, why we should not continue to grow this plant and manufacture rubber in this country, and not refuse to do it just because you can buy it cheaper in some other country."

"In other words, I do not know of anything we manufacture or use in this country that does not cost more than it does to manufacture or produce in other countries. And therefore, if it [guayule production] is logical and possible, although at a higher price, why it looks to me like we should continue to grow it for the purpose of manufacturing rubber in this country . . ."

As to the quality of guayule rubber, William O'Neil, president of the General Tire and Rubber Company, reports that his



Guayule may be processed in existing rubber machinery.



Seed is collected by vacuum and stored against the need.



firm's experience with it has shown that when desinated it can be used in almost any situation where Heavea, or plantation, rubber formerly was employed. Guayule rubber tires last 90% as long as those made of plantation rubber.

So far, synthetic rubber alone has not produced satisfactory tires. It makes good treads, but is too brittle for the body of the tire. But a combination of guayule and synthetic rubbers will make first rate tires and doubtless will be found practical in many other applications.

Thus it may be seen that although guayule offers no miracle solution to our present difficulties, it does hold the key to stable rubber supplies in the future. Every Purchasing Agent will perform service to himself and to the nation by promoting a permanent guayule project with all the means at his disposal.

The acute rubber situation which has resulted from war developments in the Far East has emphasized the wisdom and the necessity of a long range economic policy in respect to those vital materials for which we have been accustomed to depend on foreign sources of supply. In the case of guayule, the answer seems to be clear that a consistent program of development will provide an important addition to our national resources at a cost level that is thoroughly practicable.

# PLANT CONVERSION



William T. Roach

In a unique presentation of the problems of wartime conversion and subcontracting, at the N. A. P. A. Convention in New York City, May 26th, Mr. Roach assumed the role of the President of "Oshkosh, Inc.," a typical manufacturing company about to undertake its first war contracts, addressing a meeting of the directors and stockholders on some of the factors involved in this move. Mr. Mears led the discussion in the role of Chairman of the Board.

**Mr. Roach:** This war effort is making genuine progress on the production front. It has been my privilege to be associated with an industry outside of Oshkosh, Inc., as you other Directors have been and probably are.

I come from the optical industry, the industry that is required to supply the eyes that aid the gunners. It is easy enough, gentlemen, for the Navy to ask for binoculars from the sportsmen who have heretofore used them on the race tracks. It is extremely difficult, however, for the bombardier to ask and receive adequate facilities and aids for his purpose.

We have a tremendous problem before us in that particular industry, and from what I can understand of the new requirements that are coming up this spring, we shall all be engaged in the manufacture and fabrication of munitions that are urgently needed, particularly the types that are required to take care of our air force.

When the people in Detroit really get organized and the planes start rolling, we gadgeteer manufacturers are going to be encountering some real problems.

When I was associated with the Purchasing Department—and I was for over 20 years—I always tried to deal with our subcontractors as though they were a department of our own organization. We saw to it that they were thoroughly familiar with our requirements, including the long term possibilities, so that adequate tools would be provided. It is apparent that purchasing men will have to be mother-hens to a large number of manufacturers whose businesses have not been of the type that would permit them to expand as

rapidly as they desired for the purpose of aiding in expediting deliveries of products to the armed forces.

There are a number of documents available on subcontracting and converting industry. The War Production Board published in February, 1942, "Converting Industry," and "Tuning the Nation to Production of War Materials."

There are others, such as "Selling the Navy." As I was looking through this book I encountered a very short sentence which said, "The Navy knows what it wants." There is one question that is close to the heart of all purchasing men in either buying or selling, and that is the question of specifying. I believe that this is one point that must be given very careful consideration whether you are negotiating a prime contract or a subcontract. In some cases we have found that federal specifications are antiquated and out-moded. It is my recommendation that, when you enter into a long term contract, you not only review in detail all of the specifications, but you also request a sample of the product so that you can check it against the drawings that you will be expected to work to. A careful study of this kind may save considerable time and labor later on when you begin to tool for your requirements.

In many instances the inspector is the sole judge and jury when what the Navy wants is being determined. There may be occasions when the rapidly expanding personnel of the Naval Inspector's Office do not agree with the conclusions reached by your engineers and operating men, but generally speaking you will find them well informed, co-operative and willing and able to make decisions.



# and SUBCONTRACTING

By **WILLIAM T. ROACH**

Plant Manager  
Eastman Kodak Co.

and **NORTON A. MEARS**

Vice President in Charge of Purchases  
RCA Mfg. Co.

Therefore, if you are dealing with the Navy, we recommend—and you may prefer to deal with the Navy because of the potentialities of long-term contracts—this booklet on selling the Navy, which is a very interesting publication.

The Harvard School of Business has put out some pamphlets which have very fine descriptions of some of the problems of subcontracting and some of the answers that are very important. If you are not at present a prime contractor, your first contract may be the most difficult to obtain. There are the so-called facility records required by the branch offices of the War Production Board that you heard about yesterday. They request information as to your facilities, the various types of machines, the status of your present business, and a list of other important items, some of which may be filed permanently in those offices and forgotten.

I would recommend that you do not depend entirely upon local war production boards for primary or subcontracts to come to you as a result of filling out the forms—the facility records that you are required to file.

There are many forms and types of contracts that are available. Most of them require very careful consideration. If we are converting from a peacetime operation to a wartime basis of operation, it is highly desirable that we obtain copies of the Treasury Decision No. 5000. In paragraphs 42 to 53 in this decision are some very pertinent questions.

It is this type of accounting practice that will probably cause changes in the procedure that we now pursue in the normal conduct of our business. It deals with items of wage rates, administration costs, adjustments of overhead expenditures, the amortization of tools and machinery.

If we elect to do additional business in our Oshkosh, Inc., we may at the outset decide to go along with some of the long-term contracts of the Navy. The shipbuilding contracts are probably the ones that are going to extend into the future, and the adjustment



**Norton A. Mears**

to that type of business may be more beneficial than some of the short-term swings required by the Army and by the Air Force.

If we are dealing with the Navy, there are two types of contracts to consider; one is that of Government ownership of facilities, and the other is the sixty-payment plan type. If we are to consider the type of contract that is going to parallel the line of manufacture that we are now pursuing, the sixty-payment plan type might be the more desirable for us to consider.

That plan will enable us, at a minimum cost to our corporation, to install in the present lines of production additional machinery that we can probably find further use for. If we take contracts that are entirely foreign to our present line of manufacture, it would be my recommendation that we ask for Government ownership of facilities.

At this point again, I wish to caution our accounting department as to the desirability of changing our present formal accounting procedure. Our present fixed overhead rates may not apply.

In some departments and in some of our plants we are operating on a so-called blanket overhead. We will have to allocate overhead rates to various departments like the machine departments, and if those machine departments are being operated with Government-owned machinery we will have to make due allowance for the amortization of that type of machinery that is normally carried in our own fixed cost.

In dealing with the Navy on Government-owned equipment, we will have to comply with a lot of regu-

lations that may seem a little bit far-fetched and absurd. They will request three alternate bids on certain types of machine tools. It is obvious that there may be but a few available, but they seem to think that when we make our final adjustment with the Bureau of Supplies and Accounts, if all those routines are complied with we shall be better off accounting-wise.

There are a lot of other things in these contracts that probably will appear equally absurd to you, but let's consider it like an insurance policy or a bond. You can't change anything in it, and therefore we might as well go along and do the best we can under the circumstances.

We might well consider additional means of financing our Oshkosh, Inc., organization.

We have invested a considerable amount of our funds in additional machinery. We have frozen our work in process. We have stop-use orders facing us somewhat in advance of when we had anticipated stopping them in order to make a full conversion. There are a number of situations that have developed, some of which were of necessity by priority, that prohibit our billing the final product out so that our cash position has become somewhat weakened; that is, our working capital. Therefore, I can recommend several procedures that might be followed, depending upon the final approval of the Chairman of our Board and our Directors.

#### Sources of Capital

It is my understanding that in some instances the Government will advance as much as 50% of the cost of the contract. As a matter of fact, there are rumors that one division of the Government advances this money without any cost thinking that it would be added to future costs, and the other armed service has elected to charge a minimum rate of 2% for the interest.

In addition to that, there are possibilities of getting loans from local banks. They can be secured by an assignment of Government contracts, an assignment of accounts receivable to warehouse receipts or trust receipts, or other types of collateral, or they may be secured as open credit risks against net worth.

The RFC loans are available through direct contact in combination with our present banking connections, or they may be secured through personal endorsement on the part of some of our officers.

Loans are available from Federal Reserve Banks and there are several ways of obtaining this assistance. Some manufacturers have shown a decided reluctance to become indebted to the banks and there are no doubt good and sufficient reasons for this attitude. Many sub-contractors prefer to become indebted to their prime contractors by virtue of the acceptance of advance payments to finance work in process. On the other hand there have been instances where the reputation of the prime contractor served as a brake on enlisting the aid of subcontractors.

There probably will be a general contract on all types and kinds of Government financing agencies by the contracting officers of the armed forces, because,

just recently, it was revealed that deliveries of airplanes were delayed as a result of a prime contractor who had expanded much beyond what the capacity of the management had recognized as being safe, it was necessary for the Government to actually step in and finance this maker of mufflers for airplanes, and it was done within twenty-four hours.

#### Uniform Financing Policy

I understand that situation was brought to the attention of the people in Washington, and from that time on they have agreed that if the present financing facilities were not adequate they would arrange to take on the advancing of 30% to the prime contractor provided he did not advance anything to the subcontractor. In the event that he was dealing with a problem that required advances to subcontractors, he was granted 50%. That fund can be used progressively against deliveries, against stages of process, against stages of procuring facilities.

There are combinations of all of these types and means of financing available to most any and all people that have skill, and I include manufacturers who have had small family corporations. They have never been able to expand and they never have wanted to expand heretofore, but their ingenuity, their resourcefulness in their particular type of craftsmanship, is

needed in such proportions today that it behooves prime contractors to take on the responsibility of developing that type and kind of aid throughout the country, and the Government will see to it that normal credit risks can be expanded to take care of it.

#### New Cost Procedures

There are a number of questions that probably will enter your minds dealing with ways and means of estimating these potential contracts, both prime and sub. We will have to review, and in all probability set up entirely different cost procedures than those that we now have operating. It would be desirable to review shop costs dealing with materials, component parts, our direct labor, our shop engineering expense, our development cost expense, our sales analysis, and our other incidental costs for carrying on the normal conduct of our business.

Our indirect costs must also be studied, the supply, the indirect labor—and by indirect labor I mean the additional amount of supervision that will be required to take care of a lot of these products that we have never heretofore had any experience in dealing with. In many instances, our service and maintenance costs will be expanded beyond those under normal circumstances. We shall also require a number of trainees.

There will be a problem in relation to fixed charges. The amortization of the tools and facilities normally used in the conduct of our business will have to be placed elsewhere. As a matter of fact, at the outset of some of this type of business, some of our friends have considered the possibility of getting back to normal at the expense of the Government. They have



... loans are available



gone to considerable trouble to take photographs of their normal operating conditions that have to be completely distorted to provide facilities for war work.

### Looking Ahead

It is my understanding that the new rulings will not permit the cost of rearranging your plant and equipment for the resumption of peace time operations to be considered a legitimate expense item and therefore chargeable to a government contract. Therefore your cost of getting back to normal operation must be absorbed in your fixed charges. This, then, is of vital importance to your accounting department.

The amortization of patents, the charges for royalties, and other normal expenses of this kind must necessarily be reviewed and decisions made in reference to their future allocation.

For those of you who are in our audience as directors of other corporations, our accounting department has requested that we look over renegotiating contracts, section 403, that is, dealing with the Defense Appropriation Act of 1942.

(If I may step out of character for a moment I should like to point out that at the outset our own company, The Eastman Kodak Company, elected to return to the Government all profits in excess of 10%. Inasmuch as we are planning to pay income taxes with the 10% the result is that we are taking Government contracts at practically net cost.)

### Credit Risks

The wide scope and variety of types and kinds of contracts that many of our industries have been called upon to make were of such a character that it was impractical and impossible to intelligently estimate, and I would suggest that everyone who is operating on large contracts, in excess of \$100,000, make it his business to obtain a copy of section 403 of the National Defense Appropriation Act of 1942. That not only requests a review of your cost as a prime contractor, but it also requests a review of your costs as a subcontractor.

There are tremendous specialized facilities being made available for the production of a number of items that have reduced prices considerably. That applies both to prime and subcontracts. It is my understanding that some companies have returned in excess of \$100,000,000 to the Government. That type of company has been dealing, of course, in development work and was unable to arrive at fixed prices at the outset.

The situation in regard to credit risk in dealing with companies of that type may be something for us to review. There have been some subcontractors that were reluctant to take Government orders. They have asked for 50% advance payments prior to the delivery of the goods. They have felt that when, as, and if a termination clause is entered into, it would be to their advantage to have the advance payments because some of the larger companies, and some of the smaller ones in par-

ticular that have been made large as a result of this war effort, will probably have a tremendous problem in making final adjustments, and you, in turn, as a subcontractor may find a part of your working capital frozen for a period of two or three years.

The type of subcontractor that has been reluctant to go along with normal operation and says that one is obligated to do it in the performance of Government contracts, should be referred back to Government authorities as one who might better be used as a prime contractor with all the mandatory regulations coming directly from the Government rather than as a subcontractor.

These, gentlemen, are briefly some of the problems that have occurred to me as President of Oshkosh, and we might take time to review and inventory our present status. I would like at this time to ask our Chairman if he concurs or has any other points to add in relation to our present position on war work, on our subcontracting program, or other items of interest that should come before us.

### Advantages of Subcontracting

**Mr. Mears:** Am I correct in the impression that you feel that both prime contracting and subcontracting are advantageous, and if so, why?

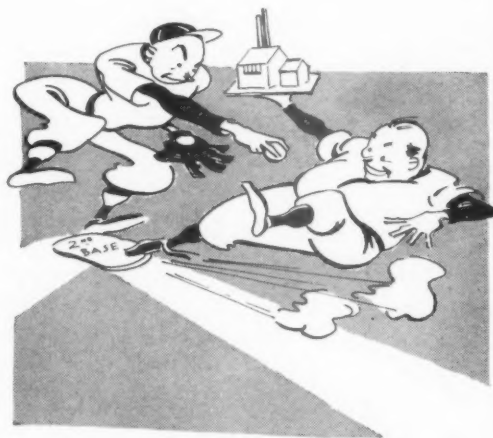
**Mr. Roach:** It is perfectly obvious in the conversion of our company that there are some departments that are going to be out of balance. It is also obvious that with our particular type of purchasing department and its resourcefulness as contrasted with that of some other companies who have set up a subcontracting division (that being a duplication of effort) that we can do more in all three directions. We can take on additional subcontracts by the use of our special facilities. We can call upon our purchasing department to aid in the procurement of additional types of component parts that we have limited facilities for. We also have possibilities of supplying other prime contractors and becoming helpful to other subcontractors of our own type.

**Mr. Mears:** I also gained from your remarks that you feel there is a possibility that we might enter this war work on a product other than our recognized particular product. Is there any reason that you have for that?

**Mr. Roach:** We do know that there are a lot of items required by the armed forces. They are being channeled through relatively small companies. We know that it is imperative that those deliveries be expedited if we are

going to get the war on an offensive basis. It is on that premise that we assume that it would be our obligation to undertake those types and kinds of products that are now under extended delivery because of limitation of facilities and personnel similar to that which we know can be developed within our own organization.

**Mr. Mears:** You quite definitely stressed a definite requirement for an understanding of the Government accounting of this prime contracting and subcontracting. Do you care to add something to that that will make it possibly a little better understood?



... take a long lead off first



**Mr. Roach:** Hysterical buying has been done by some of the large corporations throughout the country. The procurement officers of the Government have not been immune to this same virus. They have been known to place contracts with companies that have credit standings of such a character that subcontractors hesitate to work with them.

On the other hand, we have had purchase orders come in that in reality are blank checks far in excess of one million dollars. While it is true that we operate through our purchasing department, I think it is equally true that our purchasing forms must be changed; termination clauses must be added, and there is a question of accounting procedures being uniform and in accordance with the Government regulations dealing with termination clauses.

Since we are using both Government-owned facilities and facilities of our own there may be rental on machines that are used beyond the capacity of our own fabricating department for the supplying of component parts if we become subcontractors to other manufacturers that are engaged in types of prime contracts similar to those that we now enjoy.

**Mr. Mears:** In other words, I take it that you feel we must be prepared for the inevitable audit afterwards, or particularly, in connection with the cancellation or termination of the requirements of this war work?

**Mr. Roach:** There will undoubtedly be some developments of the National Defense Research Council that will cancel before the termination of hostilities some of our present contracts, and there will be that inevitable period of adjustment at the end that we must bear in mind and rearrange our procedures so that they can be expeditiously audited and our working capital restored if we are going to try and regain the position that we once occupied in civilian business.

#### Get Into the Game

**Mr. Mears:** Do you, from your studies, feel at this time that there is still a need for additional work to be taken on for the Government; that subcontracting and the conversion of domestic work is still a prime necessity; and that, not only for our own good, but to help the Government we should enter into this?

**Mr. Roach:** It is a well known fact that we have on our books, and others have as well, contracts that extend from eighteen to twenty months. It is also known that our boys on the many fronts are without adequate equipment. Anything that we can do to rush essential materials of war to these boys should be done now. We must without question take the offensive. Fighting as we are on such a far flung front, tremendous quantities of munitions and supplies must be provided some of which will never be used.

If we are going to recapture the islands in the Pacific they must be fortified, and we can probably expedite the fortification and the progressive movement towards the conquering of the Japanese.

**Mr. Mears:** If we have among our stockholders or directors interests in other companies, do you recommend that they also follow into the Government subcontracting or prime contracting where it may be advisable?

**Mr. Roach:** I think that it behooves all of the men in American industry to take as long leads off first base as they possibly can. There have been altogether too many waiting for somebody to knock the ball over the

center field fence before stealing second base. They hesitated because conversion to War Production required serious adjustments within their organizations and because there were speculative risks. In my opinion there are numbers of those fellows that could go into action and help win this war quickly. Better this way than to be invited in or invited out because of their inability to obtain materials.

While we are on this subject I strongly recommend that we review our inventories and return to useful service without further delay all critical and essential materials even though we are obliged to absorb losses resulting from the difference between our inventory book values and scrap values. If we do not do this we are not going to have the opportunity to write that type of thing off against further Government contracts. It may not be allowed. There may be excess profits tax possibilities in your present accounting system that will permit you to do this immediately.

#### Training for New Skills

**Mr. Mears:** We have covered the financing, the accounting, and the material. What is your prospect for expectancy in rearranging your employees in this Government work in view of the fact that different skills are required?

**Mr. Roach:** We have obtained remarkable results by giving authority and responsibility to people that have not heretofore had an opportunity to demonstrate their capabilities. There is the possibility of drawing on our trade schools for skilled labor. Operations may be broken down in such a manner that but relatively few highly skilled mechanics are needed to keep the process going. Inspection of component parts throughout the production line will reduce the difficulties often found in the final assembly operations. The general training plans that are in use in other industries might well be reviewed. The Department of Labor at Washington has prepared some very exhaustive studies. We feel that the types of personnel that we require will in all probability be available. There are a number of our foremen who have tried to break the operations down and develop the skills of the boys and girls on somewhat the same theory as that which is used in the courses that were prepared by the International Correspondence Schools. As they become more proficient they take on more work and very soon we find that they are capable operators.

I see no problem in converting our people to the types and kinds of programs that we have under consideration.

**Mr. Mears:** Thank you, Mr. Roach. I don't believe we need a vote of confidence. We would like to leave this subject with our stockholders and directors.



#### Richmond Centralizes Buying

J. Wortham Huffman has been appointed to the newly created position of City Purchasing Agent at Richmond, Va., taking office June 1st. Under the revised charter, the Purchasing Agent will buy all supplies for all city departments with the exception of the School Board, and will dispose of scrap and obsolete materials and equipment. He is also a member of the Board of Standards, to classify and standardize specifications for all purchased items. Mr. Huffman is a graduate of the University of Richmond. He was formerly Purchasing Agent for the Johnston-Willis Hospital, and for several years past has been a partner in the Holladay Co., oil dealers.

# STOCK CONTROL AT A GLANCE

By EARL LIMBAUGH

Here is a simple visual system of control in a self-service stockroom for printed forms and stationery, coordinated with complete specifications and a quarterly ordering schedule. It adds up to some notable savings of time, effort and expense.

**T**HE at-a-glance system of stock control used in the stationery department of the Missouri Utilities Co., Cape Girardeau, Mo., has materially reduced printing costs and simplified the reordering of new supplies of stationery. The plan is the product of E. W. Neumeyer, Purchasing Executive of the firm.

The method consists of storing each of the concern's 450 different printed forms in a cardboard box, to one end of which is pasted a heading of the form. When an employee empties a box, he reverses it. Thus a mere glance at the boxes informs the Purchasing Agent of the amount needed to replenish the stock.

"Formerly we kept stationery forms in wrapping paper, with the form number attached to the front of the package," explains Mr. Neumeyer. "This made it necessary to tear open the package to get a form, and was very unsatisfactory. Opened packages were always torn and ragged, permitting dust and dirt to enter and shop-wear the forms. The arrangement was also disorderly and wasteful. Some of the more expensive forms costing up to 8c or 10c each would be thrown away because of the accumulation of dirt and dust on the top-most form.

"Another reason we sought to store stationery in a different manner was that the form number itself was not so well known by the firm's employees as the form's title or heading. This was particularly true of some of the general run of forms used by all employees. Because of this, it was necessary to keep a special stationery stockroom attendant having full knowledge of the forms by stock numbers, etc. Some forms were stored in the basement, some were on the first floor, others on the second floor. It was an inefficient arrangement throughout."

Therefore, all forms were placed in cardboard boxes of uniform size—mostly 8½ by 11 inches, the larger



Approximately 450 different printed forms are stored here in unit boxes of 500 sheets each. The form heading attached to each box identifies the form and shows the quantity available at any given time. Note the inks, located adjacent to recording chart forms, and the trimming board on desk.

forms in special boxes to fit particular forms—and stored, 500 sheets to the box, in a stationery storeroom located next to the purchasing agent's office. The room is approximately 14 feet square.

## Storeroom Is Self-Serving

This centralization and arrangement of forms does not require the services of a stockroom attendant. The use of the headings instead of numbers permits employees to quickly select the forms themselves, making the stockroom practically self-serving.

Boxes holding recording charts for gas, electric, water and ice utilities are identified by the form number because the firm's plant men and engineers know and call for these charts by name and number thus: "Taylor, 131," "Brown Instrument, 407," or "Republic Flow Meters, 60-40," etc. Specific recording inks required for the various charts are also kept in the chart section of the storeroom.

Since only one department of the firm uses the Treasury Department forms and its personnel is familiar with their numbers, stationery for this department is stored, labeled and requisitioned by number only.

Closely related departmental forms are stored together. Purchase Requisitions, formal Purchase Orders, Local Purchase Orders and Material Receipts are grouped closely in one horizontal section, as are the forms for Electric Service, Water Service, and

Gas Service. All ledger sheets are kept together, occupying a section about five feet square. Carbon papers and blotters are likewise grouped.

Forms less frequently used or taken from the storeroom are kept on the higher shelves while oft-needed stationery is stored low so that it may be reached without using the ladder.

Keeping a trimming board in the storeroom with which to cut obsolete or discontinued forms into desk-size tabs has practically eliminated the purchase of

## STANDARD FORMS IN REPRINT SCHEDULE NO. I.

Specification File			Specification File		
Form No.	Title	Folder No.	Form No.	Title	Folder No.
GENERAL FORMS			GAS FORMS		
1122	Toll Calls	161	D 6152	Industrial Appliance Card	201
A 211-2B	Purchase Order	1	A 9310-21A	Cover for Financial Report	338
A 211-3A	Rush This Bill For Discount	162	F 9314-11	Financial Report-Oper. Exp. Acts. Water	340
A 211-4	Revision of Purchase Order	163	F 9314-21	" " " " " "	
A 212-11C	Request for Quotation	164	F 9314-31B	" " " " " "	
A 227-11A	Stock Inventory	165	D 9314-21	" " " " " Gas	
A 227-21E	Monthly Count	166	D 9314-11	" " " " " "	341
A 228-1A	Stock Tag	167	D 9314-31B	" " " " " "	
A 1121	Message	168	D 9314-42	" " " " " "	
A 1226-1B	Individual Earnings & Tax Record	169	119 (S1365)	Production Expense	
A 1312	Real Estate Record	364	120 (S1366)	" "	347
A 6113-1A	Name or Address Correction (also 362)	170	121 (S1367)	" "	
A 6124-2C	Shipping Label	171	122 (S1368)	" "	
A 6171-A	Trouble Report	172	129 (S1369)	" "	
A 2311-4	Trouble Report	362	130 (S1370)	" "	348
A 6172-A	Complaint Log	173	131 (S1371)	" "	
A 9111-3B	Our Representative Called	174	985-1	Daily Automobile Report	
A 9112-1	Special Readings	175	A 9321-2	General Ledger Sheet, Conforms	349
A 9112-2	Final Reading Report	176	A 9311-6A	Federal Power Commission	
A 9143-1B	Statement of Account	177	D 9310-2	Financial Report Recapitulation	
A 9153-1A	Cashiers Coupon	178	D 9310-2A	Operating Revenue & Statistics, Gas	
A 9322	History of Record Permanently Retained and Destroyed	179	G 201	Gas Meter Data (Columbia)	352
A 9325-2A	Detail of Fixed Capital	329	A 9411-16	Financial Report —Sales & Rental Data	
A 9325-3	Detail of Operating Accounts	328	B 9314-4	" " —Production Operating Expenses & Statistics, Electric	
A 9325-4	Detail of Subsidiary Asset Accounts	319	B 9314-5	" " —Ditto	
A 9328-2	Accrual or Prorate	318	B 9314-6	" " —Ditto	353
A 9328-3	Depreciation Accruals	180	B 9314-18	" " —Operating Expense Accounts, Electric	
A 9328-5	Income Tax Record	316	B 9314-19	" " —Ditto	
A 9334	Voucher Index	181	B 9314-20	" " —Ditto	
A 9337	Distribution Sheet	182	B 9317-5	" " —Electric Plants Acts.	354
A 9342-1D	Time Voucher—Large	322	B 9317-6	" " —Electric Plants Acts. — Continued	
A 9342-2	Time Voucher—General and Office	183	B 9317-7	" " —Summary of Property	
A 9344-5	General and Office Payroll	321	B 9310-2	" " —Operating Revenues & Statistics, Electric	
A 9344-9	General and Office Payroll	320	B 9310-3	" " —Operating Expenses Summary, Electric	374
A 9344-41A	General and Office Payroll	184	A 9318-1C	" " —Detail of Balance Sheet Accounts	
A 9348	Statement of Time	185	A 9311-8	" " —Detail of Income & Earned Surplus Accounts	
A 9349-2	Roster and Employment Envelope	323	A 9313-11A	" " —Summary of Operating Revenues, Exp. & Taxes	
A 9362-2	Receipt	186	A 9313-12A	" " —Ditto	352
A 9362-3	Receipt	187			352
A 9366-4	Petty Cash Statement	188			
A 9371-2	Dues and Contributions	189			
A 1111-1C	Letterheads	190			
A 1111-2A	Letter Second Sheets	191			
O 1111-4	Copy Paper	192			
O 2131-1	Purchase Record	193			
O 9344-1A	Payroll	194			
O 9344-2A	Payroll Distribution	195			
O 9346-1A	Salary Receipt	196			
A 9347-1C	Payroll Advice	325			



Forms in general use are quickly found, making self-service practical. Boxes are reversed when empty, signalling the need for replacement.

Treasury Department forms are identified by number only, as indicated on this typical shelf in the stationery stockroom.



scratch pads, resulting in a small but significant saving of about \$50 a year for the company. This procedure also clears the shelves and keeps the stockroom 100% active.

A master index labeled "List of Standard Forms" also facilitates handling of reprint orders. It contains 375 of the more important forms, by file number, form number and heading of the form. Individual folders hold a sample of the form plus specifications as to title, size, paper, printing, ruling, margins, perforating and scoring, punching, binding, and "remarks."

The master index is divided into four sections, each of which covers and lists forms that need reprinting and/or reordering in any quarter of the year, i.e., on September 1st, December 1st, March 1st and June 1st. This insures a regular and systematic review of requirements and avoids emergency ordering.

#### Quarterly Ordering Schedule

"In line with the foregoing," explains Mr. Neumeyer, "every three months, we take or refer to the master index List of Standard Forms for that particular quarter and check the quantity on hand in the storeroom with the particular forms appearing in this List. A list of requirements covering a year's supply of these forms is then made up, after consulting the Manual of Public Utility Stationery and Forms."

The Manual is the entire work of the Purchasing Agent. It contains and illustrates the principal and more important forms used by the field offices of the concern. All forms were designed and redesigned to meet, as near as possible, the particular needs of the various offices whose requirements are at variance. Uppermost in the mind of the author was the thought of greater economies that may be effected through the medium of a catalogue, or manual, wherein a few factors are presented that are advantageous and also those

that tend to increase the cost and expense of the concern's annual stationery account.

The Manual is always consulted in reordering stationery, and particularly the chapter, "Size and Weight." This is to assure the purchasing agent that he is not buying odd-sized forms.

Through the elimination of odd-sized forms, and revising them to a standard size, so that they would cut without waste, a minimum saving of \$250 a year has been effected.

#### Eliminating Paper Waste

"There is real economy in drawing forms to a size that will cut without waste," observes Mr. Neumeyer, "for the cost is computed on the quantity of small forms or sheets that will cut from a full standard stock sheet. The purchaser pays for all cut off strips or waste. For instance, on ledger sheets the item of design, or rather size, is very important, as such forms are cut from heavier stock (namely, 24, 28, and 32 lb. ledger stock), and the item of waste runs into larger figures than on the lighter weight paper."

Mr. Neumeyer's Manual of Stationery Forms gives tables of the sizes of different forms, showing how many forms of a given size can be cut from a standard sheet of given size. The tables also reveal improper sizes when the size of the form does not divide evenly into the size of a standard stock sheet. The Manual also contains data on the misuse of stationery, storage methods, factors of color and glare, and an index of bristol stock.

The system of stock control plus the "List of Standard Forms" and the Manual enable Mr. Neumeyer to purchase efficiently and economically for his firm, and provides smooth and effortless service in respect to these somewhat complex and detailed forms essential to the business.



"It's very nice, but you'll have to take it up with the City Purchasing Agent."

# THE MARKET PLACE



Quotations on basic materials for carloads or mill shipments, with comparative prices quoted one month ago and one year ago

(\*denotes ceiling price)

	July 1 1941	May 25 1942	June 23 1942
<b>ACIDS</b>			
Acetic, 28%, cwt.....	2.23	3.38	3.38*
Muriatic, 18 deg., cwt.....	1.50	1.50	1.50
Nitric, 36 deg., cwt.....	5.00	5.00	5.00
Oxalic, Works, cwt.....	10.75	11.25	11.25*
Phenol, Works, cwt.....	14.25	14.25	14.25
Sulphuric, 66 deg., ton.....	16.50	16.50	16.50



## BUILDING MATERIALS

Brick, N. Y. dock, per M....	12.00	13.00	13.00
Cement, f.o.b. plant, bbl.....	2.15	2.15	2.15
Glass, single B, per box.....	2.80	3.14	3.14
Lime, pulv., N. Y., per ton...	17.00	17.00	17.00
Nails, wire, per keg.....	2.55	2.55	2.55*
Oak flooring, rep M. ft.....	84.00	85.00	85.00
Southern pine, K.C., per M ft.	30.41	52.50	52.50*

## CHEMICALS

Alcohol, denatured, gal.....	.38	.65	.65*
Alumina Sulf., Comm., Works, cwt.....	1.15	1.15	1.15
Ammonia, aqua, 26 deg., drums .....	.02¼	.02¼	.02¼
Arsenic, White, cwt. ....	3.50	4.00	4.00
Red, cwt. ....	nom.	nom.	nom.
Barium Chloride, ton .....	77.00	77.00	77.00
Carbonate, ton .....	56.50	56.50	56.50
Benzol, pure, gal.....	.14	.15	.15
Borax, powd., ton.....	48.00	50.00	50.00
Chlorine, cwt. ....	1.75	2.00	2.00
Formaldehyde, lb. ....	.05¼	.05¼	.05¼*
Glycerine, drums, lb.....	.14½	.18¼	.18½*†
Lead, acetate, white, broken cwt. ....	11.00	13.25	12.50 †
Nickel sulphate Double .....	.13	.13	.13
Single .....	.13	.13	.13
Potash Caustic, solid .....	.06¼	.06¼	.06¼
Permanganate .....	.20	.20½	.20½
Sal Ammoniac Gran. white, cwt.....	4.50	4.50	4.50
Gran. gray, cwt.....	5.75	5.75	5.75

	July 1 1941	May 25 1942	June 23 1942
<b>SALT</b>			
Saltwater crystals .....	.086	.092	.092
Soda Ash, 58%, light, bulk, cwt.	.90	.90	.90
Caustic, 76%, solid.....	2.30	2.30	2.30
Sal, Works, cwt.....	1.10	1.10	1.10
Sodium Bicarbonate, cwt. ....	1.70	1.55	1.55
Tri-Sod. Phosphate, cwt..	2.35	2.90	2.90
Silicate, 60 deg., cwt.....	1.65	1.65	1.65
Sulphur, Comm., cwt.....	1.60	1.60	1.60



## COAL & COKE

Anthracite, stove, mines.....	6.35	6.75	6.75*
Bituminous, Cleaf, mine run..	2.70	2.70	2.70
Beehive Coke, Connellsville..	6.00	6.00	6.00*
By-product Coke, Newark....	12.45	12.45	12.45*

## FERTILIZERS

Muriate potash, 62-63%, per unit K 20 .....	.53½	.53½	.53½
Sulphate potash, 90-95%, bags .....	36.25	nom.	nom.
Nitrate soda, bulk.....	27.00	27.00	27.00
Sulphate ammonia, dom., bulk.	29.00	30.00	30.00
Steamed bonemeal, 3 and 50 per ton .....	36.00	37.50	37.50

## GRAINS

Barley, malting, bu.....	.74½	.98¼	.86½ †
Corn, No. 3, yellow, bu.....	.73½	.85	.84½ †
Oats, No. 2, white, bu.....	.38½	.54	.50½ †
Rye, No. 2, Western, bu.....	.70¾	.85½	.80½ †
Wheat, No. 2, hard winter, bu.	.96	1.11	1.11¼ †
Flour, spring patents, 196 lbs.	5.95	6.05	5.95 †

## HIDES

Light native cows, lb.....	.15	.15½	.15½*
Heavy native steers, lb.....	.15	.15½	.15½*
Calfskins, 5-7 lbs., per skin..	1.80	1.65	1.65*

JULY, 1942



	July 1 1941	May 25 1942	June 23 1942
<b>IRON &amp; STEEL</b>			
Pig iron, foundry No. 2.....	24.00	24.00	24.00*
Pig iron, basic, valley.....	23.50	23.50	23.50*
Cast iron pipe, New York....	52.20	52.20	52.20*
Forging billets, Pittsburgh base	40.00	40.00	40.00*
Sheet bars, Pittsburgh base...	34.00	34.00	34.00*
Wire rods, Pittsburgh base...	40.00	40.00	40.00*
Cold rolled sheets, cwt., Pitts- burgh base .....	3.05	3.05	3.05*
Hot rolled annealed sheets, cwt., Pittsburgh base....	2.10	2.10	2.10*
Cold rolled strips, cwt., Pitts- burgh base .....	2.80	2.80	2.80*
Hot rolled strips, cwt., Pitts- burgh base .....	2.10	2.10	2.10*
Tin plate, cwt., Pittsburgh base	5.00	5.00	5.00*
Bars, cwt., Pittsburgh base...	2.15	2.15	2.15*
Shapes, cwt., Pittsburgh base.	2.10	2.10	2.10*
Bright wire, cwt., Pittsburgh base .....	2.60	2.60	2.60*
Ground shafting, cwt., Pitts- burgh base .....	2.65	2.65	2.65*
Rails, ton, Pittsburgh base...	40.00	40.00	40.00*



#### METALS, NON-FERROUS

Aluminum, virgin ingots.....	.17	.15	.15
Antimony, American, spot...	.14	.14	.14
Copper			
Electrolytic .....	.12	.12	.12*
Chromium, 97%, spot.....	.84	.84	.84
Lead, E. St. Louis.....	.057	.0635	.0635*
Nickel, ingot .....	.35	.35	.35
Quicksilver, flask .....	188.00	199.22	199.22*
Silver, bars, N. Y., per oz....	.3434	.3514	.3514
Tin, Straits, spot.....	.5274	.52	.52*
Zinc, E. St. Louis.....	.0725	.0825	.0825*

#### METAL PRODUCTS

Copper, wire, bare, cwt.....	15.75	15.375	15.375
Yellow brass sheets, high....	19.48	19.48	19.48

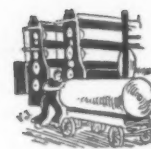


#### NAVAL STORES

Turpentine, gal. ....	.48½	.67¼	.60½ ↓
Rosin, Grade B, cwt.....	2.40	2.78	2.76 ↓

#### PAINT MATERIALS

White lead, dry, basic, carbon- ate .....	.07½	.07½	.07½
Carbon black .....	.03325	.03625	.03625
Shellac, orange .....	.24	.32	.36* ↑
Linseed oil .....	.114	.143	.139 ↓



#### PAPER

News, roll, ton.....	50.00	50.00	50.00*
Book, M. F., cwt.....	6.90	7.50	7.50*
Wrapping, Northern, cwt.....	5.25	5.50	5.50*
Wrapping, southern, cwt....	4.50	4.75	5.00* ↑
Wrapping, manila jute, cwt...	8.75	10.75	10.50* ↓
Chip board, No. 1, ton.....	42.50	45.00	45.00*
Wood pulp, mech., ton.....	36.00	46.00	46.00*
Wood pulp, sulph., No. 1, cwt.	3.17½	3.17½	3.17½*



#### PETROLEUM

Crude, Mid-Continent .....	1.17	1.17	1.17*
Crude, Penna. ....	2.30	2.55	2.55*
Gasoline .....	.08	.092	.092*
Bunker Oil C. ....	1.35	1.80	1.80*
Kerosene, 41-43 grav.....	.052	.057	.057
Penn. bright stock, light, 25 P. T. ....	.29	.36	.36
Penn. cylinder oil, 600 flash...	.19½	.26½	.26½



#### RUBBER

Smoked sheets .....	.22½	.22½	.22½†
(† Rubber Reserve Co. selling price)			



#### TEXTILES

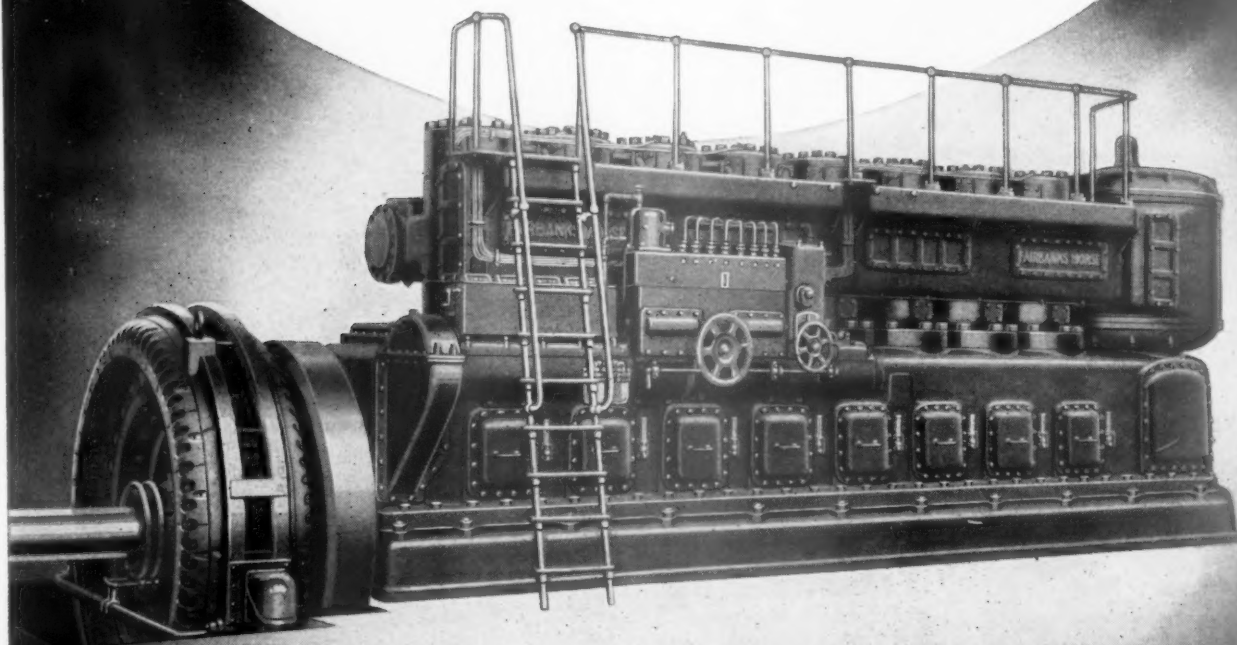
Cotton middlings, Galveston..	.1418	.1969	.1874 ↓
Cotton yarns, 22s .....	.33½	.43	.43
Print cloths, 38½", 64 x 60...	.09¼	.08971	.08971*
Sheeting, 37", 48 x 48.....	.09¾	.10375	.10375*
Wool, fine combing, ½-blood	1.00	1.15	1.15*
Worsted yarns, French 2-40s	2.00	nom.	nom.
Worsted yarns, English 2-40s	1.95	nom.	nom.
Silk, Japan, double ex. cracks	3.08	3.08	3.08*
Rayon viscose, 150, 40s.....	.53	.55	.55
Burlap, 10½-oz., 40".....	.1325	.11	.11*
Hemp, Manila .....	.09½	.10¼	.10¼

# POWER

## *for High-priority Jobs*

Do you need extra power to meet war production schedules? Then use your priority to buy Fairbanks-Morse Diesel-generators. They will assure you of uninterrupted power, low unit power costs, and freedom from peak penalties . . . not only now, but in the future, too.

F-M power engineers, unbiased because the line includes all types and sizes, are ready to study your needs. Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago, Illinois.



# FAIRBANKS-MORSE



**DIESELS  
MOTORS  
SCALES  
PUMPS**

*When writing Fairbanks, Morse & Co. please mention Purchasing*

# New PRODUCTS IDEAS

## TWO-WAY COMMUNICATION SYSTEM



■ New application has been developed of a standard two-way communication system and is now in use in a large metropolitan building, by a force of air raid wardens divided into 40 air raid sectors, to control all tenants and employees. Each sector has a warden, and serving him is one remote station of this communication system. The remote stations connect to a master unit in the Chief Warden's Headquarters in the third sub-basement of the building. An auxiliary amplifier at the master location permits high power broadcasting of simultaneous messages to all of the remote stations. The master station is arranged with an annunciator type of pushbutton selector to call or receive calls from individual remote stations. Thus the equipment serves for normal use as well as for emergency.

### Reassuring Voice Instruction Instead of Sirens

In the event of an alert signal, the chief warden can call the sector wardens to attention without disturbing the employees in any of the sectors. He then can broadcast instructions, start and direct orderly movement with the aid of the sector wardens, toward the prearranged safety area for each sector. His sustained broadcast to all of the employees over the communication system is intended to back-up the activities of the sector warden on each scene and

prevent panic during the movement. At the same time the two-way arrangement permits any sector warden to report impending difficulty so corrective measures can be taken at once. Remote stations in the smaller areas are desk-type units in the standard Executone line. Trumpet models serve the larger areas. Each is designed to permit the sector wardens to talk back to the chief warden at some distance from the station itself. As recommended by the Office of Civilian Defense, the equipment is separate from the regular telephone service. It eliminates the need for disturbing sirens, bells, or whistles. The system, manufactured by Executone, Inc., of New York City, can be converted to normal peace-time use after the emergency.

## WOOD FILES SAVE STEEL



■ More than 135 pounds of steel are saved in the new "Forty-Niner" four-drawer filing cabinet, made 97.3 per cent of wood. It is the latest addition to the war-style products which conserve vital metals by using replacement materials.

Total metal content of the file is only 37 ounces. The side and back panels and drawer bottoms are made of Masonite "Tempered Presdwood." Selected seasoned woods are used in frames and drawers, which are glued, screwed and braced with inset joints.

Ten fiber rollers support the drawers, mounted on full wood suspension. Exposed hardware is metal with baked bronze enamel finish. The cabinets are finished in olive green to conform with traditional units.

Standard steel files average about 140 pounds in the letter size. The "Forty-Niner" weighs only 86 pounds. Use of presdwood instead of steel has put the retail price below the steel cabinet range.

Horder's, Inc., of Chicago, distribute the "Forty-Niner." In announcing the product, Mr. E. Y. Horder, president, said: "This is the file that must serve the great majority of business needs until we beat the Axis. For us who sell and those who buy office equipment, it is a case of sheer necessity that such a file be created. Steel cannot be diverted from the war program for such use."

## SHIPPING PACKING MATERIAL

■ An entirely new and revolutionary type of shipping packing material has been placed on the market by Research Products Corp., Madison, Wisconsin.

This resilient material is made of kraft stock, expanded into a honeycomb pattern. This exclusive expansion process creates a third dimension having an unusual cushioning property.



This new shipping pack will conform to double curvature surfaces achieving a streamlined effect. Because of its lacy

(Continued on page 88)



# Constant jams at the turns upset piping systems, too!

THE DANGER LIES AT THE  
**TURNS**



## WELD WITH TUBE-TURN FITTINGS TO SOLVE TOUGH PIPING PROBLEMS



In this process industrial plant, the double problem of complete protection against leakage and other possible piping failures plus the necessity of a compact piping layout, is easily solved with Tube-Turn welding fittings. Tube-Turn fittings offer the advantages of greater strength and safety, faster installation, less weight, less pressure loss, less space occupied, and a full line of fittings for every welding piping need.

## Tube-Turn Welding Fittings protect your piping where it counts most!

At a roller derby, people rush to get seats near the turns for the thrills are there! It's at the turns where the speeding skaters bunch up and try to cut off opponents—it's here where crowding the turns means trouble. The same hazard exists in piping systems at the turns, for pressure and strain are proportionately increased wherever flow direction is changed. That's why welding with Tube-Turn fittings is the best possible protection against piping failures occurring where the danger is greatest—at the turns. There is a Tube-Turn welding fitting for every piping turn!

Write for helpful Tube-Turn data book and catalog.

TUBE-TURNS, INC., LOUISVILLE, KY. Branch offices: New York, Chicago, Philadelphia, Pittsburgh, Cleveland, Tulsa, Houston, Los Angeles, Washington, D. C. Distributors in all principal cities.

**TUBE-TURN**  
TRADE MARK

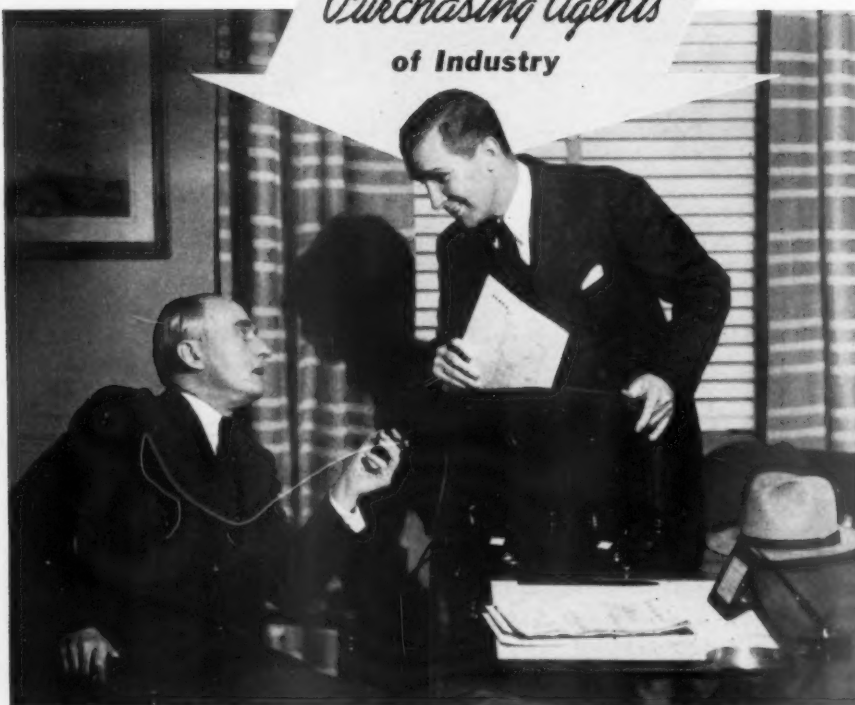


*Welding Fittings*



**INTRODUCING  
A 25 YEAR OLD  
RUST PREVENTIVE**

TO THE  
*Purchasing Agents*  
of Industry



## Used Extensively on Railroads and Pipe Lines • • Now ALL OUT for War Service

Bridges, water tanks, rail joints, and steel buildings exposed to the most corrosive conditions are protected with NO-OX-ID. Pipe lines under rivers and through corrosive soils have been protected for years with the original application. NO-OX-ID is a completely engineered rust prevention service consisting of NO-OX-ID and NO-OX-IDized Wrappers offered to all manufacturers with a rust problem to solve.

### Protection for Parts Awaiting Assembly

Parts made in one department and assembled in another need NO-OX-ID protection against atmospheric corrosion or against finger marking in handling.

### Protection for Shipments at Home and Overseas

A combination of NO-OX-ID and NO-OX-IDized Wrappers makes a mois-

ture-proof and water-repellent package for shipping containers. Wrappers are self sealing without special tools or heat.

### Protection for Machinery and Equipment

Machinery and equipment in outside, unsheltered storage exposed to heat, cold, rain, snow, high humidity, and corrosive gases or fumes, can be safely protected with NO-OX-ID.



**NO-OX-ID**  
**IRON-OX-RUST**  
TRADE MARK  
The Original Rust Preventive

There's a NO-OX-ID engineer with industrial rust preventive packaging and storage experience nearby to help you. Write us and we'll have him call.

## DEARBORN CHEMICAL COMPANY

Dept. AA, 310 S. Michigan Avenue, Chicago, Illinois

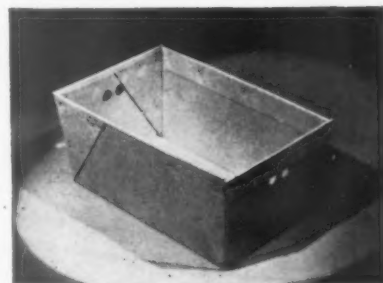
*When writing Dearborn Chemical Company please mention Purchasing*

openness, it partially reveals the article packed. Because of these unusual properties, it adds a quality note to any item.

Among the features enumerated for this new material are its comparative lightness, its uniformity, its ease of handling and economy. It will be furnished in rolls and pads, and will not scatter.

To permit experimental use, the Research Products Corporation is offering a generous sample roll of the pack for \$1, including shipping.

### CORRUGATED TOTE BOXES



■ To help relieve metal shortages, "lighten the load" for war workers, and to help cut down injuries in the plant, more and more "war" manufacturers are adopting corrugated tote boxes for small parts on the assembly line, between departments, and in storage. Widely accepted by war manufacturers is the large size corrugated tote box illustrated, one of more than twelve basic types designed by The Hinde & Dauch Paper Company, Sandusky, Ohio.

The lighter weight of corrugated board makes it ideal for women workers in war production. Injuries to worker's fingers, caused by sharp edges and splinters, are entirely eliminated. Because of the extremely low cost of corrugated board, and because it may be adapted to so many shapes and styles, it readily lends itself to the making of tote boxes for a wide variety of uses in industry.

Corrugated tote boxes, trays and bins are by no means new in industry. Electric appliance manufacturers, department stores, radio manufacturers, laundries, confectioners and many others have been using them for years. Although a specially engineered corrugated tote box, or tray or bin may be designed quickly and easily, many manufacturers have found that one of the several basic styles already established are highly satisfactory for their purpose.

### DUAL-PURPOSE PUMPING UNIT

■ A combination rotary-centrifugal dual pumping unit has been added to their line of pumps by the Blackmer Pump Company, Grand Rapids, Michigan.

The new unit is mounted on a cast bedplate and is powered by a 4 hp., 3 phase 60 cycle motor with a gearhead on one end to drive a rotary pumping unit, and a shaft extension on the other end, connected direct to a centrifugal pump. The rotary pump has a capacity

# JUNK

*—you've got what it takes*

*T*HAT old junk -- useless to you -- may provide the extra implements of war to insure Victory -- your old iron and steel, copper, brass, rubber, even burlap, paper and grease.

Take steel, for example. Every hundred pounds of scrap you turn in will help produce one more powerful demolition bomb to speed the destruction of those plants that enable the Nazis and Japs to prolong the war.

To make the steel for a large tank, 10 to 15 tons of scrap are needed. And one badly needed "sub-chaser" takes many carloads of scrap.

The steel industry is using all its resources to produce more steel, but it needs your help and needs it now, -- that's why the junk you can turn in is so vital to America's war effort.

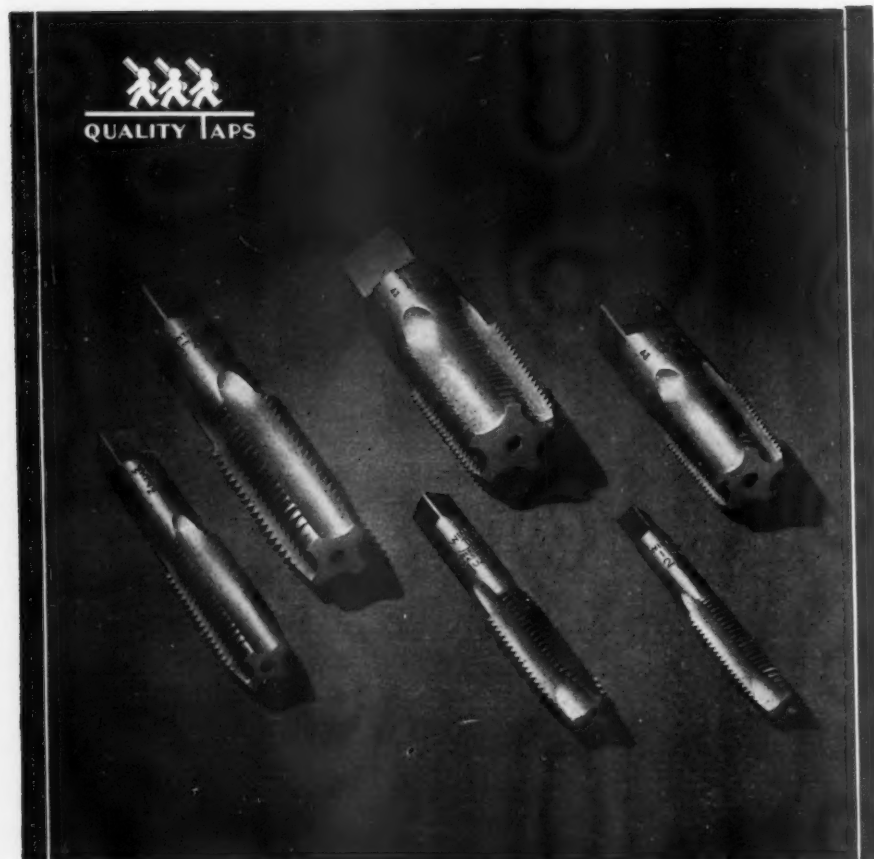
**THE YOUNGSTOWN SHEET & TUBE COMPANY**  
*Youngstown, Ohio*



*When writing The Youngstown Sheet & Tube Company please mention Purchasing*



## WE WILL SATISFY THOSE WHO DEMAND THE BEST



### FOR VICTORY—

and the metal-working Industry—The Winter Brothers Company are utilizing every man and machine to produce Quality taps in ever-increasing volume; without sacrificing that vital factor which built their popularity—Accuracy.

Winter Taps are precision tools—handle them carefully for maximum production.

A DIVISION OF

THE NATIONAL TWIST DRILL & TOOL CO.  
DETROIT, MICHIGAN

**Winter Brothers**  
COMPANY  
Wrentham, Massachusetts, U. S. A.  
Branch Factory: Detroit, Michigan



of 44 g.p.m. at 50 psi., handling lube or fuel oil. The centrifugal pump has a capacity of 75 g.p.m. at 25 psi. handling water.

In Marine, and other applications where pumping facilities for both lube or fuel oil and water are required, these new Blackmer units offer obvious advantages. They are currently being used in connection with the war effort on marine craft and in industrial plants on applications where two dissimilar liquids must be handled through one pumping unit.

### HOSE CLAMP



■ Designed, built and tested for applications where strength, durability and safety are paramount, this Hose Clamp is a solid band clamp of stainless steel, welded with four spots at the nut, which assures the full strength of the solid band. The bridge is floating, which eliminates friction and strain and permits the use of a torque indicating wrench so that all clamps can be tightened uniformly. As an added safety feature, thumbscrew head is punched for tie-wire.

Made by Wittek Manufacturing Company, Chicago, Illinois.

### SELF-ALIGNING IDLER

■ Chain Belt Company have announced a self-aligning idler for flat conveyor belts, both return and carrying, which will help to keep the belt central on its supporting idlers, important for longest possible life from a conveyor belt.

The operation of this self-aligning idler is sensitive and instantaneous. If for any reason, the conveyor belt runs to one side it has a tendency to swivel the idler in a horizontal plane. If this in itself is not sufficient to cause the idler to swing enough to force the belt to throw back immediately, the belt will continue traveling to one side until it contacts the counter-weighted end disc, which is slightly larger in diameter than the idler roll. Contact with the counter-weight tends to rotate it, but since it is a counterweight it resists this tendency to rotate and produces a counterforce on the idler. This causes the idler to swivel rapidly, throwing the idler more out of line which then immediately forces the belt to swing back the other way.

These REX flat belt self-aligning idlers are sturdily built units, using the

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★  
READING-PRATT & CADY  
VALVES  
★

## LOYALTY IS NOT TAGGED WITH THE PRICE OF BRASS

These are the UNITED STATES.

Of course we differ among ourselves. But the world has learned, again, that these are family matters—marks of energy that, upon attack, crystallize to dynamic unity.

Men who battled the devil with words from the pulpit now fight him with machine guns from the ranks. Fingers that were trained for gossamer express their loyalty on the assembly lines of huge bombers that will blast America's enemies from security.

And it is no less indication of the spirit to-

day that, as forge and press thunder their answer to the call to war, men in industry cease to demand that priority deliver *anything* for peace that tools can fashion into arms. In that same spirit, too, men no longer clamor that vitals such as nickel, chromium, and brass be delivered for civilian use.

Certainly, substitutes for products of proved economy work hardship and add to the cost of industry. And that may be particularly true when applied to valves.

But, Americans already prove that they don't tag their loyalty with the price of Brass!

# READING-PRATT & CADY

MANUFACTURERS OF  AND  VALVES AND FITTINGS

Reading, Pa., Atlanta, Boston, Chicago, Houston,  
Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco



A Division of AMERICAN CHAIN & CABLE COMPANY, INC. Bridgeport, Conn.

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**NEW**  
**Cable-Core**  
**V-BELTS**  
WITH  
**NEW BLACK JACKETS**  
"Neutralized" Cable-Cores  
Uniform Flexibility  
Tailored to the Grooves  
New, groove-gripping jackets.  
Cable-like cords in neutral section  
with a special extensible section  
above and compression section below.  
— belts cured in precision molds.

**Sheaves**  
Medart Sheaves have  
smooth side, correct size  
V-Grooves for a balanced,  
smoother running V-Drive.

**MEDART-TIMKEN**  
**PILLOW BLOCKS**  
"SS" and "TS" "DM" and "DC"  
Medart-Timken Type "SS" and Type "TS" Bearings  
—straight and taper sleeve—are self aligning in both  
—straight and Expansion Types . . . The  
Non-expansion Type is adapted to general purpose ap-  
plication—wherever minimum friction is desired in the  
Straight Sleeve Type is suited to high speeds and shock loads  
Sleeve Type is suited to high speeds and shock loads

**GEARS! Any Kind**

# WE Train Power TO WORK FOR YOU MORE EFFECTIVELY

Now as never before you must  
make the most of every piece of  
equipment. Why not let us help  
you? Our line of complete  
power transmission equipment  
. . . . our 60 odd years of  
experience . . . our staff of  
expert transmission engineers  
— All are at your service.



**GET CATALOGS**  
No. 56-V: V-Belts  
and V-Sheaves  
No. 56-G: Gears and  
Sprockets  
No. 66: All Other  
Power Transmission  
Equipment

**For**  
**Power Travel at Reduced Rates**

**POWER TRANSMISSION  
ENGINEERS**

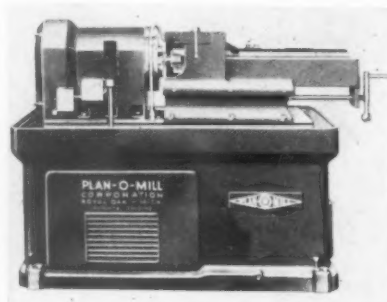


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Sales Offices in All Principal Cities

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same principle of construction as the REX self-aligning troughing idlers that have been very successful. No side guide rolls to impose unnecessary wear on the belt edge are used. Where excessive misalignment of a conveyor belt exists, caused by such factors as stretch or weave in the belt, uneven loading of material on the belt, or shifting of the conveyor frame, REX self-aligning idlers spaced at intervals between the stationary idlers will automatically bring the belt back to the central position, and avoid the possibility of serious injury to the conveyor belt.

## PLANETARY MILLING MACHINE



■ The Plan-O-Mill Corporation of Royal Oak, Mich., announced a further improvement in its standard planetary milling machine. This improvement involves the use of a General Electric Thy-mo-trol feed control, built into the machine.

Thy-mo-trol is a new development of the General Electric laboratories, and its use as standard equipment on the machine is believed to be an innovation. Converting alternating current into direct current, Thy-mo-trol provides an infinite and stepless range of feed, both into and around the work, by regulating the flow of current to the feed motor. Changing gears and sheaves is unnecessary.

The new Plan-O-Mill development is designed to promote maximum production consistent with maximum cutter life. Parts too cumbersome or irregular in shape for the conventional milling machine are milled speedily and accurately on the machine, since all motion is in the milling head. The part does not move. On even the largest job the time required to reverse the cutter and return it to center is reduced to 15 seconds or less.

It is designed and widely used for internal and external, right or left hand, threading and form milling where rapid production, precision, and high finish are required. It is also suited to many types of form milling.

## SMALL TURRET LATHE

■ A bench model turret lathe for rapid production to close tolerances on chucking operations or bar work has been announced by the South Bend Lathe Works of South Bend, Ind. This lathe has a 10" swing over the bed and saddle



# RIGHT NOW ...for Armament work you can use these Abrasive Finishing Machines

## ★ DELTA Abrasive Belt Finishing Machine

When you are confronted with an urgent need for increased production in connection with the U. S. armament program—check into the possibilities of these Delta machines. Here is a 6" Abrasive Belt Finishing Machine that is heavy and husky enough to do any of the dozens of sanding, polishing and finishing operations to be found around the average shop, yet which is portable enough to be used just where it is needed. It has found wide acceptance for finning, finishing and surfacing metal and plastic parts. Every feature has been designed to eliminate disadvantages usually found in small belt polishing machines. The frame is heavy and substantial; the adjustments convenient and positive in action; attachments are quickly attached or removed; the machine may be used either vertically or horizontally, as required. It is completely guarded, and dust removal may be made efficiently. It is completely ball-bearing equipped with double-seal bearings, lubricated at the factory for life. There is no rubber covering required on the drums which eliminates one source of replacement expense.



No. 1402-C—  
Abrasive Belt  
Finishing Machine

## ★ DELTA Abrasive Disk Finishing Machine

Designed to meet every requirement for accurate finishing, this Delta Abrasive Disk Finishing Machine is a high-grade tool for high grade work. From its completely machined, true-running 12" disk to its large surface table and the husky spindle of the belt-drive machine, carried on self-sealed ball bearings, it is designed for long life, low power consumption and accurate, dependable results.

Made on two models; one a direct-drive unit employing either a ½ H.P. or a ¾ H.P. ball-bearing motor.

The disk in this unit fits directly onto the end of the motor shaft, making the machine completely self-contained. The other model is a belt-drive unit, which makes it possible to use any motor available, to use motors built for odd frequencies or voltages and to vary the speed to suit individual operations.

Dust collector available, making machine adaptable for use in locations where dust is objectionable.



No. 1426—Abrasive Disk  
Finishing Machine

### Send for CATALOG

giving full details and prices on Delta Abrasive Finishing Machines—and also showing full line of Delta drill presses, grinders, band saws, and other Delta low-cost machine tools.

THE DELTA MFG. CO.  
642-G E. Vienna Avenue, Milwaukee, Wis.

Please send me Catalog giving full details and prices on Delta Abrasive Finishing Machines, and your full line of low cost machine tools

Name .....

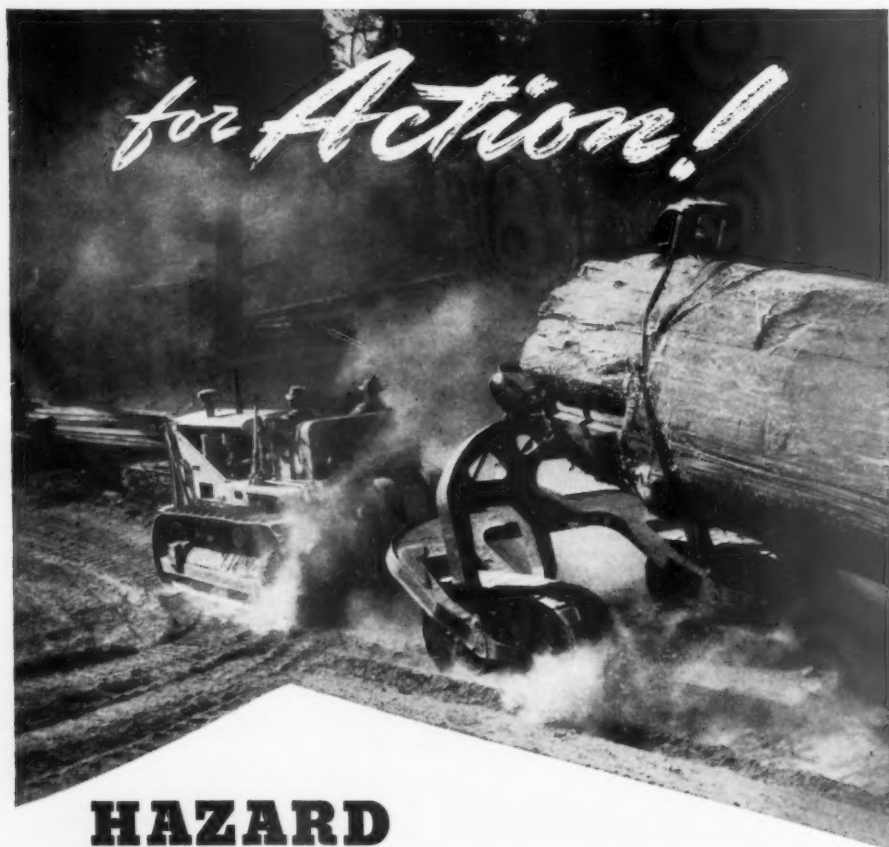
Address .....

City ..... State .....

# DELTA MILWAUKEE

DELTA  
Quality  
PRODUCTION  
TOOLS

When writing The Delta Mfg. Co. please mention Purchasing



## HAZARD

### LAY-SET Preformed wire rope

*When war put pressure on all industries, purchasing agents began to clamor for more Hazard Lay-Set Preformed Wire Rope.*

*Lumbermen, for example, knew that Lay-Set Preformed could handle thousands more board feet, safely, at less cost. They knew that this wire rope's longer life saved steel for other war work.*

*Experience had taught them that Hazard dependability inspired confidence all the way from the standing timber to the mill.*

*These advantages also explain why Hazard is equally well liked in other industries by men who handle the rope as well as those who plan the work and pay the bills.*

*Hazard performance often amazes those not familiar with its endurance. Yet Hazard war records only repeat what this wire rope has done many times in years of peace.*

*Hazard Lay-Set Preformed Wire Rope is one of the 137 products we build for Industry, Agriculture and Transportation, which are essential in peace, vital in war.*



## AMERICAN CHAIN & CABLE COMPANY, INC. • BRIDGEPORT, CONNECTICUT

In Canada—Dominion Chain Company, Ltd. • In England—The Parsons Chain Company, Ltd., and British Wire Products, Ltd.  
American Chain, American Cable Wire Rope and Aircraft Controls, Campbell Cutting Machines,  
Ford Chain Blocks, Hazard Wire Rope, Manley Garage Equipment, Owen Springs, Page Fence  
and Welding Wire, Reading Castings, Reading-Pratt & Cady Valves, Wright Hoists and Cranes

*When writing American Chain & Cable Company, Inc. please mention Purchasing*

wings, 1 3/8" hole through the headstock spindle, and 1" collet capacity. It is well adapted to second operation work.

The handlever operated bed turret indexes automatically and has an adjustable stop for each of the six turret faces. The lathe is equipped with both a compound rest cross slide and a handlever cross slide, which are interchangeable. The latter is furnished with front and rear tool blocks which provide three tool positions. A quick change gear box supplies 48 longitudinal power feeds for the universal carriage, 48 power cross feeds for the compound rest cross slide, and 48 thread cutting feeds, 4 to 224 per inch. The underneath motor drive and back gears deliver twelve spindle speeds, from 97 to 700 r.p.m.

### QUICK ACTING OPERATING VALVE



■ Designed especially for shell forging presses, this four-way quick acting operating valve, designed and produced by Baldwin Southwark Division of The Baldwin Locomotive Works, Philadelphia, Pa., has proved itself in service on many shell forging press installations as well as on other hydraulic presses. The valve has a forged steel body; spindles and seats are of alloy steels. Seats are removable for grinding or replacement.

Quick acting and efficient, it prevents loss of high pressure fluid and minimizes any tendency to water wire drawing of the seats and spindles. Shell forging operations are speeded up because the valve is pilot operated. It employs either air or hydraulic fluid which is controlled by a small easily operated auxiliary valve.

### FLUORESCENT REFLECTOR

■ Development by the fluorescent lighting fixture industry of a new-type reflector, constructed of materials not vital to war production, was announced recently by the Lighting Division of Hygrade Sylvania Corporation, Salem, Mass.

An industry-wide change-over to this type of reflector would release, for more critical war production, important quantities of sheet steel currently used in reflector manufacture.

Because fluorescent lighting makes more efficient use of electrical power and provides more light of better quality, it is considered an extremely important

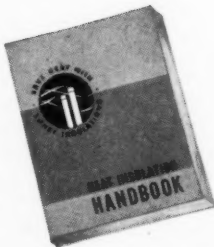
GETTING THE ***MOST*** FROM YOUR THERMAL INSULATIONS...

NUMBER 4 in a series of messages to American industry devoted to conserving heat, improving operation and increasing production through modern insulation practice.

***PROPER APPLICATION  
IS IMPORTANT...***

## ★ EHRET'S 85% MAGNESIA

and many other Ehret heat insulating materials are fully treated, both as to selection and application, in the new 176-page Heat Insulation Handbook. It will be furnished, without obligation, to those interested in getting the most from their thermal insulations. Write today for your copy of Handbook E 207.



Canvas, paints and the ability of the painter are the raw materials which enter into the making of a painting. The degree of knowledge and skill possessed by the artist determines largely whether the finished picture will be a valueless daub or a priceless masterpiece. Similarly, even the best of thermal insulating materials will fail to fulfill their functions if they are not properly applied. Selection of an efficient time-tested material, such as Ehret's 85% Magnesia, is of primary importance. And the skill with which Ehret approved contractors apply coverings and blocks to piping, boilers and equipment is equally vital to overall insulating efficiency.

# ***EHRET***

## **MAGNESIA MANUFACTURING CO.**



**VALLEY FORGE, PENNA.**

**...THERE IS AN EHRET DISTRIBUTOR OR CONTRACTOR IN EVERY INDUSTRIAL AREA**

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**FOR VICTORY**  
BUY  
UNITED  
STATES  
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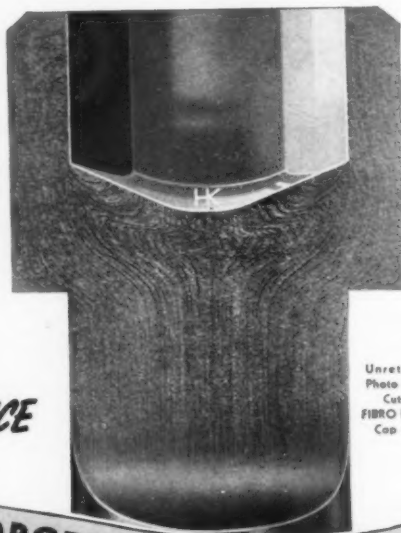
**NO DRILLING NO MACHINING NO EXTRUDING**

## ON TIME

### For the Battle of Production

War Production Demands for Holo-Krome FIBRO FORGED Socket Screws are met "on time." Getting them to the production fronts—with the H-K standards of Quality and Precision rigidly maintained—is a responsibility the entire Holo-Krome organization cheerfully accepts and fulfills—"on time."

**GUARANTEED**  
*Unfailing PERFORMANCE*



Unretouched  
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Cutaway  
FIBRO FORGED  
Cap Screw.

**COMPLETELY COLD FORGED from SOLID STOCK**

**HOLO-KROME**  
*fibro forged*  
**SOCKET SCREWS**

THE HOLO-KROME SCREW CORP., HARTFORD, CONN., U.S.A.

factor in 24-hour-a-day war production. It is being used in a great majority of war production plants, and thousands of fixtures are being manufactured for this purpose daily.

These fixtures utilizing the new composition reflector will employ only about 1/3 as much steel as present fixtures, and thus the amount of steel made available for other war production will be considerable.

Made of a specially treated composition, the reflector is considerably lighter in weight than present reflectors. General appearance, however, remains the same. The reflecting surface is the same high-temperature synthetic enamel used on many of their present fixtures, and has equally high light reflectivity.

Inspectors of Underwriters Laboratory have seen the unit and examined its construction. Hence, it will carry the U L seal and the standard Hygrade guarantee.

This development is the result of exhaustive research by lighting engineers, who have sought for some time to achieve a reflector which would equal the metal reflector in efficiency, but utilize non-essential materials.

## GLASS FLOODLIGHT



■ A glass floodlight combining the high reflectivity of silvered glass with unusual resistance to shock has been announced by the Lighting Division of the General Electric Company. The new unit was designed to eliminate vital materials needed for War Effort.

Although the reflecting surface is made entirely of glass, it is completely shatter-proof. The reflector is coated by electrolytically deposited metal which together with an over-all backing of porcelain enamel will keep the glass from shattering even if it is broken by a severe blow.

The reflector is joined to a metal socket housing which is thoroughly sealed with a heat-resistant gasket and which acts as a preventative against the entrance of water, making the floodlight corrosion-proof. Door glass and gasket fit solidly against the reflector, further assuring protection against water, dust or dirt. This floodlight, said to be from 10 to 30 per cent more efficient than all-metal units it replaces, utilizes 300- or 500-watt lamps. It is known as G-E Type L-49.

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# WHERE DO YOU *Go* FROM HERE?



FOR FABRICATED METAL PARTS » » TURN TO

## LYON WAR PRODUCTS STAFF

This staff—which meets daily—has more than a year's experience expediting War Contracts. Its record for getting results has won widespread press comments.

● Write for this brochure. It shows where Lyon facilities can be used to best advantage in accelerating war goods production.



● Getting a contract for War materials is one thing. Organizing to deliver it when and as needed is quite another . . . particularly when competent sub-contractors must be located, their facilities investigated, and their bids analyzed.

For products or parts of products fabricated from metal, turn to Lyon Metal Products, Incorporated, to get quick, positive cooperation, and "on time" deliveries. Our War Products Staff—representing all major departments—meets daily to expedite war contracts. This staff—widely experienced in handling special war products—provides a practical knowledge that saves time and eliminates false steps.

Back of Lyon's War Products Staff is one of America's largest and best equipped metal fabricating organizations. Lyon's modern plants

cover an area of over half a million square feet. Each department is fully equipped for fast, precision handling of its particular job . . . utilizes the latest production machines, tools, and methods developed by our own engineers. Completely equipped tool rooms assure prompt production and maintenance of all necessary dies and jigs.

So, if your War Contract requires fabrication of No. 8 to No. 30 gauge metal—come to Lyon for action! Comprehensive brochure, "Craftsmen in War Production" describes Lyon facilities in detail. A copy is yours for the asking.

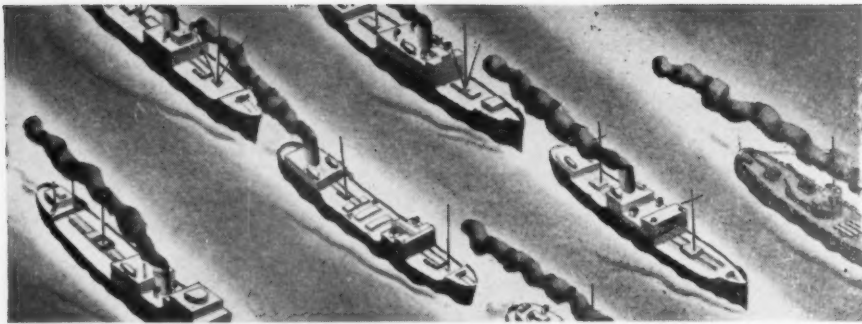
### LYON METAL PRODUCTS, INCORPORATED

General Offices: 3307 Madison Avenue, Aurora, Illinois

Sales and District Offices Manned by Experienced Engineers  
In All Principal Cities

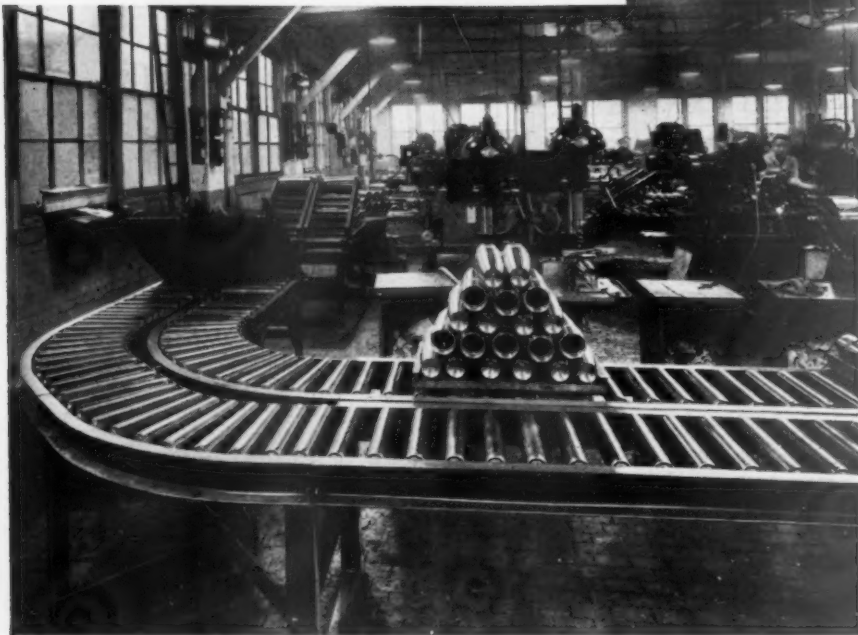
## LYON METAL PRODUCTS, INCORPORATED

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## UNBROKEN SUPPLY LINES

... WITHIN THE PLANT!



● Engineers responsible for production know that unbroken supply lines within the plant are as important as unbroken supply lines to and from the plant.

They are ever on the alert for new applications of Mathews Conveying Equipment because it pays dividends in time and labor serving . . . and in stepped-up production of materials vital in the war effort.

## MATHEWS CONVEYER COMPANY

ELLWOOD CITY, PENNA.

Field Engineers and Sales Offices located in 30 Industrial Centers

### DOUBLED CAPACITY FOR WAR PRODUCTION

Stepping up our productive capacity month after month has barely enabled us to keep pace with mounting war orders. As long as this condition exists, it becomes increasingly difficult to meet civilian requirements. Our one big job is the handling of war material. That job must come first.

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### TOOL STANDS

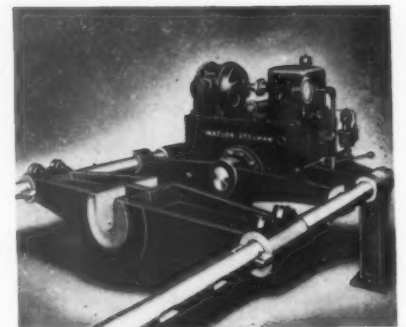


■ These tool stands recently announced by Lyon Metal Products, Inc., Aurora, Ill., are very handy for efficient individual storage of tools for workers on one, two, or three shift operations.

They are useful around production machines and toolrooms as toters up to the job; for assembly lines, parts and tool transporters for maintenance men, equipment carriers for inspectors and for stock picking and transportation.

Drawers can be locked to guard against thieving of important tools. Drawers feature easy sliding and flat key locks.

### 100-TON FORCING PRESS



■ A new 100-ton forcing press has just been completed by The Watson-Stillman Co., Roselle, N. J. The press represents an improvement over former types in that control of all motions is by a single hand lever. The unit is entirely self-contained, including 10 H.P. motor and variable delivery radial piston pump.

The press is of the horizontal, two-bar type. It will be used for forcing shafts into rotors but is also suitable for any other forcing operation. Distance between bars is 72". Opening is adjustable from 24" to 120". Stroke of ram is 18". Gap in the rear abutment is suitable for holding shafts up to 6" diameter.

Advance speed is 200" per minute, pressing speed variable from 0 to 25" per minute and return speed is 140" per minute.

The entire unit, designed as Machine No. 8676, weighs 10,000 lbs.



# Planes are Forgings

Trainers, pursuits, bombers, flying fortresses—they're faster, more durable and better able to withstand the gruelling punishment of long distance flights and the rigors of combat because of the broader use of tough, stress resistant forged parts. Wing, strut, fuselage, engine and bomb rack forgings are typical parts that we are producing for the aviation industry. Our production has grown, in one short year, from a few parts made for one plane builder to thousands of parts shipped daily—seven days a week to aviation companies all over the country.

We're in this war to win—and if we can help you with forgings for planes, tanks, ships, guns or machine tools, we'll find some way to expand our already over-taxed production facilities.

We're beating plow shares into swords—for democracy.



Proudly we fly the Navy "E" flag awarded for excellence and proficiency in the production of Naval Materiel.

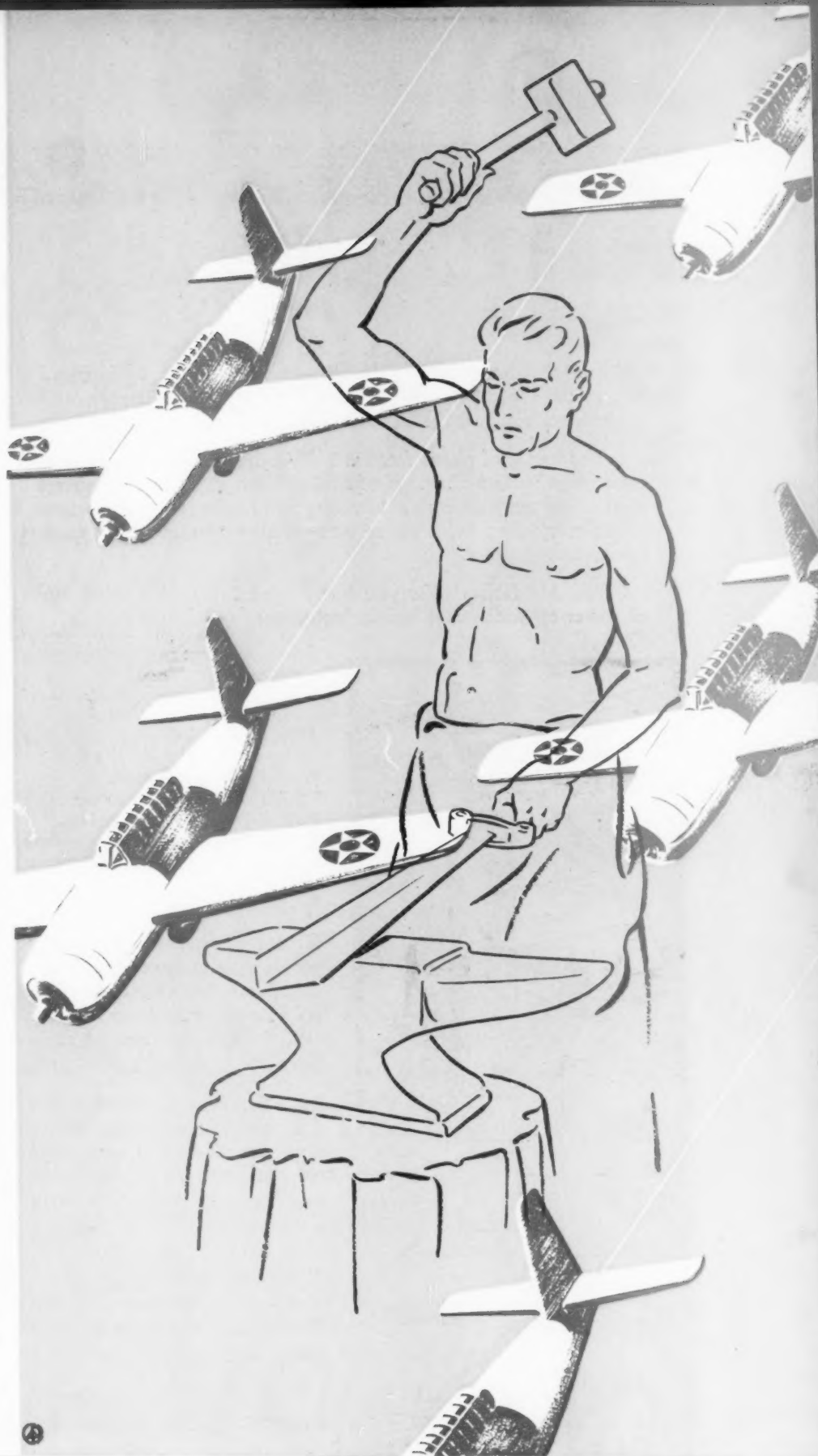
## KROPP FORGE COMPANY

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# KROPP

## You Can't Overload a CURTIS AIR HOIST!

Curtis One-Man Air Power Hoists are not damaged by attempting to lift a load beyond their rated capacity—they simply will not lift overloads and are therefore immune to this common type of abuse.

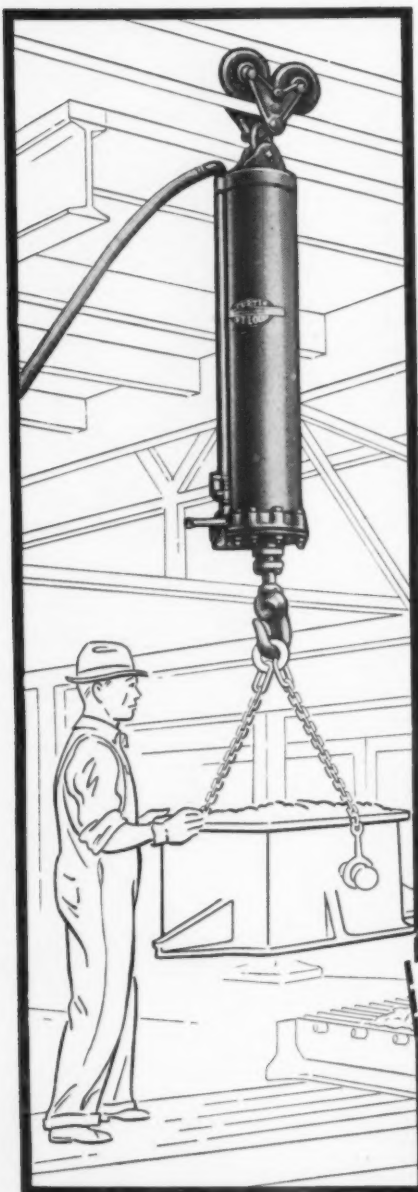
In thousands of plants faced with Wartime demands for increased production, plus a shortage of skilled labor, Curtis Air Hoists are performing many lifting and lowering jobs faster, more accurately, at lower cost, often with fewer men—easily operated by unskilled labor, too.

Curtis Air Hoists offer you many advantages over other types of power or mechanical hoists, including:

- Low first cost and low operating expense
- Smooth, fast, accurate control of loads
- Variable hoisting and lowering speeds
- Minimum dead weight
- No chains to stretch or wear out
- Available in pendant or bracketed types (direct or rope compounded)
- Fewer production interruptions for servicing
- Capacities up to 10 tons

If your plant has any hoisting problem, it is more than likely that Curtis Air Hoists will speed up your work, release men for other jobs, reduce man-power fatigue, and lower production costs.

For full information on Curtis Air Hoists and their many important industrial uses, send the coupon today for free booklet, "How Air Is Being Used in Your Industry."



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Curtis Pneumatic Machinery Division  
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Please send me free booklet C-60, also  
information on Curtis Air Hoists.

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City..... State.....

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### PUMP-TANK EXTINGUISHERS

■ In modern warfare, the incendiary bomb has been proved to be the enemy's most destructive weapon—and a serious industrial hazard. The incendiary bomb requires special treatment. While all types of extinguishers are effective on fires resulting from such bombs, the bomb itself is best controlled by a fine water spray played on the bomb during its period of activity. The average bomb requires about five gallons of water for successful control.



The pump-tank extinguisher, developed by engineers of the Buffalo Fire Appliance Corporation, Buffalo, N. Y., meets the industrial requirements for combating incendiary bombs. The pump-tank extinguisher is substantially constructed of galvanized steel, painted red. A double-action pump assures adequate water pressure to fight the bomb at a safe distance. These extinguishers are easily carried to the point where the bomb lodges; operation is simple. A large re-fill opening at the top facilitates quick replenishing of water, during operation if necessary.

They are supplied in two capacities, 2½ and 5 gallons. The latter size is recommended for general industrial applications.

### AUTOMATIC AIRPAINTING UNIT



■ A streamlined airpainting unit for coating interiors and exteriors of 40 MM shells is being manufactured by the Paasche Airbrush Company, Chicago, Ill., and units of this type are already in operation in many war plants. Production on a machine like that pictured above is 1,920 pieces per hour with 2¼ minutes drying time. However, variable speed drives permit increase or decrease in production or drying time, and conveyors are supplied in sizes to meet any requirement.

Shells are conveyed to coating stations on revolving spindle assemblies

FROM FACTORY TO FIRING LINE

# *In Less Time* with **ATKINS**

## **New Segmental Cold Saw Unsurpassed for High Speed Shell Stock Cut-Off!**

● Here's a typical example of how Atkins Saws are coming through with unprecedented production on vital armament jobs. A 28-inch Atkins Curled-Chip Segmental Cold Saw is reported as cutting 3-5/16" round shell stock, nested, in 4 minutes! If your plant is engaged in shell manufacturing, you will want full data at once on the production-boosting potentialities of Atkins Curled-Chip Saws.

The illustration at the right shows a section of an Atkins Cold Saw with teeth replaceable in segments. It also shows the characteristic shape of the Atkins Curled-Chip Tooth—a new tooth form that has revolutionized metal sawing. This tooth bites into metal like a lathe-cutting tool, removing metal in curled-chips, permitting enormous increases in cutting rates.

An Atkins engineer will gladly go over your cutting problems with you, and recommend a saw that will handle your work faster and with greater efficiency than you may have thought possible.

**E. C. ATKINS AND COMPANY**  
Indianapolis, Indiana



Photo by U. S. Army  
Signal Corps

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## A PAIR OF IRON BODY VALVES FOR CONTINUOUS SERVICE



Fig. 1640 I.B.B.M.  
"King-clip" Gate



Fig. 1644 All-Iron  
"King-clip" Gate

On lines where uninterrupted service is essential . . . which means *all lines* in these critical times . . . you'll do well to use these two Lunkenheimer iron body gate valves.

They are built to stand up under rough, hard usage . . . to stay tight and to give the added long service life so necessary now when replacement time is so important.

You can use them to advantage in the many places where small gate valves are used. Fig. 1640 has wide application on steam, oil, gas, water and gasoline lines and Fig. 1644 on many corrosive lines.

Once installed, these quality valves will do their part well.

Since virtually all materials used in the manufacture of valves are on the list of critical materials, valve users are urged to furnish the highest possible preference ratings on their orders. This will be of mutual helpfulness.

ESTABLISHED 1862  
**THE LUNKENHEIMER CO.**  
"QUALITY"  
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# LUNKENHEIMER VALVES

mounted on steel roller chain and are held by combination holding and shielding fixtures. Hollow shield also protects threaded portion on interior from paint. Holding fixtures are interchangeable so shells of different sizes and types can be accommodated. Spindles, set at 3" centers, are removable.

Interior of shell is coated first by air-brush which is automatically oscillated, following the shell while spraying interior surfaces. This feature assures complete, uniform coverage and a maximum of savings in material. Work continues to exterior coating station and then through infra-red drying section.

A water wash exhaust booth is provided to accommodate both spraying operations and assure a maximum degree of safety. Features of this booth also eliminate the usual manual cleaning, thus saving considerable time and maintenance.

The automatic airpainting unit is complete, and includes infra-red drying unit, exhaust unit, high quality centrifugal pump with water wash booth, automatic airbrushes, water, oil and dirt separator and time-saving "clamtight cover" pressure feed material tanks. Frame is of heavy pressed steel, streamlined in design—9'5" long, 4'11" wide, 2'6" high.

### PLASTIC TUBING FITTINGS

■ Fittings molded from Saran, the important new thermoplastic, are now available for tubing sizes  $\frac{1}{8}$ " to  $\frac{3}{8}$ " O.D. By means of these fittings it is now possible to set up a complete, chemically resistant piping system without the use of any metal, thus effectively breaking the bottleneck of materials available for this purpose.

These fittings have a high tensile and bursting strength, are non-corroding and non-aging and, being also non-conductors of electricity, are able to prevent the formation of galvanic couples.

They are fabricated by the Acadia Synthetic Products Division of the Western Felt Works, Chicago, Illinois, who also process Saran tubing, pipe, rod and sheet.

### 18-INCH SEARCHLIGHT

■ For use at industrial plants, public utilities, ordnance plants, and aboard ships, an 18-inch incandescent searchlight with pilot house control or flat base, is announced by the Westinghouse Lighting Division, Cleveland, Ohio.

Intense beam concentration is obtained by a primary precision-ground and polished silvered-glass reflector and a metal secondary reflector to permit continuous operation with lamps up to and including 1500 watts. A tandem reflector shield, mounted in the center of the primary reflector eliminates all secondary heat concentration on the lamp bulb. Heat dissipation is by radiation, permitting a dust-tight enclosure.

Body and back sections of the housing are of sheet steel. Door and door frame are of cast iron with integrally cast hinge and lathe lugs. The door is clamped in position against a weather-



**DON'T TAKE CHANCES  
with  
Plant Protection**

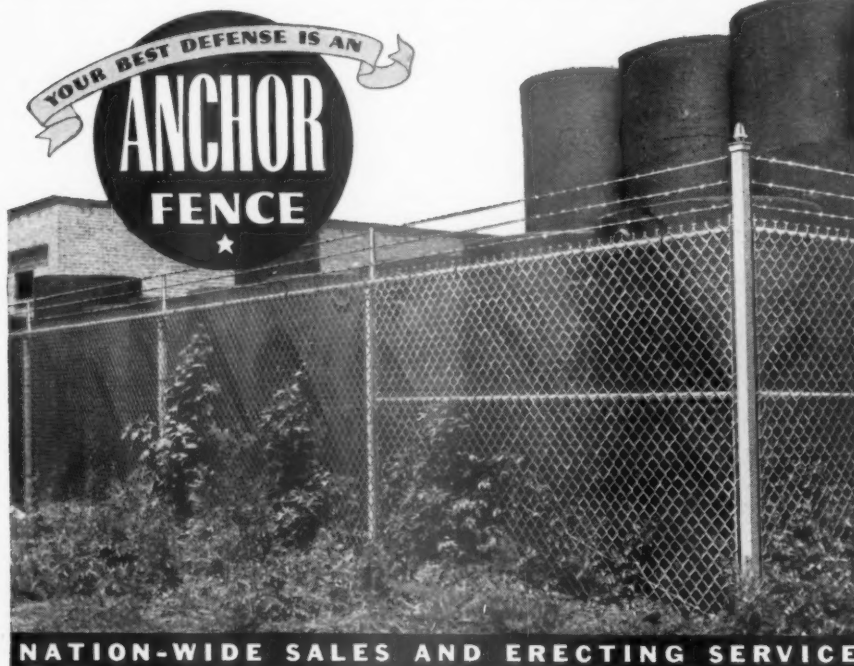
**To Shut Out Sabotage and Trouble  
SPECIFY ANCHOR FENCE**

"ALL-OUT" production on defense contracts demands "all-out" protection today. It's time to shut out trouble—with an Anchor Fence *around* your plant—and special Anchor enclosures *within* your plant to keep all but the most trusted employees away from power stations, transformers, laboratories, chemical and material stocks, fuel supplies, parking lots and other vital points.

Anchor Fences provide effective "all-out" protection—and permit storage of materials outdoors—with minimum expense for guards and maintenance. And

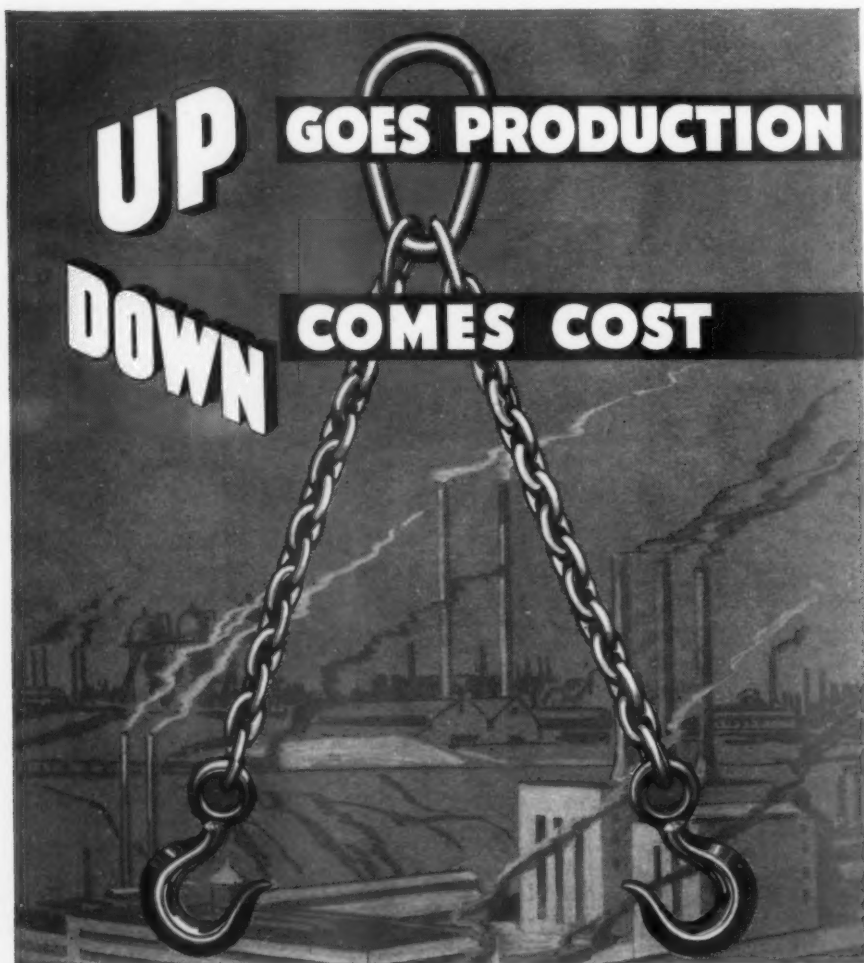
they can be quickly erected in any soil, in any weather, even when the ground is frozen. The exclusive, patented, driven "Anchors" hold the fence erect and in line, resist terrific force, yet can be moved without loss in case of plant expansion.

Send for an Anchor Fence Engineer. Get the benefit of Anchor's 50 years of industrial fencing experience. Write now for the Anchor Industrial Fence Catalog—and name of nearest Anchor Fence Engineer. Anchor Post Fence Co., 6615 Eastern Avenue, Baltimore, Maryland.  
**1892-1942 Fifty Years of Service**



**NATION-WIDE SALES AND ERECTING SERVICE**

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## **HERC-ALLOY SLING CHAINS**

*double*

**STRENGTH  
SERVICE  
SAFETY**

Smooth movement of materials through manufacturing departments means more profits. Herc-Alloy Sling Chains, America's FIRST alloy sling chains, are facilitating speedy production, safeguarding men and materials, and reducing costs in every type of industry.

Fabricated from a high-grade alloy steel of nickel and molybdenum, Herc-Alloy Sling Chains have the endurance and stamina to withstand the toughest industrial assignments. Heat treating under rigid pyrometer control insures uniformity and ductility. Herc-Alloy Sling Chains

never crystallize or develop grain growth ... therefore, they NEVER require annealing. Links are electric welded by the patented "Inswell" process providing 25% more metal at the critical point in the link ... at the weld. For double strength, service and safety, plus cost-cutting performance, specify Herc-Alloy Sling Chains.

CM manufactures a complete line of chain for every application. Trained engineers are available for consultation on your chain problems. Write for Herc-Alloy catalog today.

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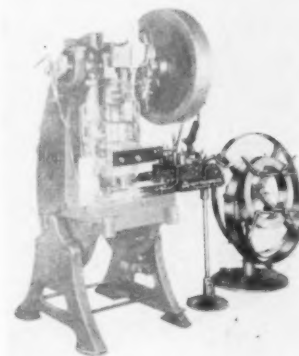
tight heat-resisting gasket or graphitized asbestos.

The lens is of heat and impact resisting polished glass mounted against a weather-tight gasket and held in position by steel spring clips. Primary reflector is a 19-inch parabolic commercial-precision mirror coated with silver and sealed by an electrolytic coating of copper and synthetic material. Secondary reflector is of polished metal too and provides high reflectivity.

The body is supported in a steel bow with locking handles to position the luminaire at any fixed elevation and rotation. Socket assembly is the standard mogul bipost-type rated at 50 amperes, 600 volts. It is normally fixed in position but is independently adjustable for elevation and rotation.

All castings and sheet parts are finished with one coat of red lead oxide and two of weather-proof green paint. Hardware is galvanized or plated.

### **ROLL FEED & REEL STANDS**



■ The model 6L automatic roll feed and model 3B reel stand, manufactured by the Wittek Manufacturing Company, Chicago, Ill., are designed for rapid, smooth and accurate feeding for punch press operation in the production of aircraft. The rolls of the feed turn constantly, while the forward movement of the stock is arrested momentarily by release of the rolls to allow for stamping operation, and ejecting of the stamped part. Power for driving the feed is transmitted by chain from a sprocket mounted on the crank shaft of the press to a sprocket on the drive shaft of the feed. Adjustable chain tightener takes up the slack and permits the use of interchangeable sprockets for any desired ratio between the press and the feed.

### **SUBSTITUTES FOR TIN-BASE BABBITS**

■ Two new lead-base bearing metals, known as Pyramid and Defender, have been developed by the Magnolia Metal Company, Elizabeth, New Jersey, as substitutes for tin-base babbitts which are now so difficult to secure.

Pyramid metal is well suited to applications where bearings must withstand heavy sustained pressures, such as are found in marine reciprocating engines,







### IN NATIONAL BISCUIT COMPANY'S NEW DENVER PLANT

**T**HE new streamlined one-story plant of the National Biscuit Company at Denver is a revolutionary development in the baking industry, following the trend to regular "assembly line" production. Raw materials enter one end of the plant—finished products come out the other.

Engineered throughout for peak efficiency, it was logical that Carey Insulations should be utilized for their high efficiency in conserving heat and fuel. Steam and hot water lines are insulated with Carey 85% Magnesia; cold water piping with Carey Perfecto Woolfelt.

Carey Insulations meet every service requirement from sub-zero to 2500°F. They offer greater resistance to breakage—greater permanence; effect fuel savings that normally pay back their cost in a year or less. Whatever your insulation needs, you can depend on Carey for satisfaction. For details, address Dept. 68.

*The Philip Carey Manufacturing Company*

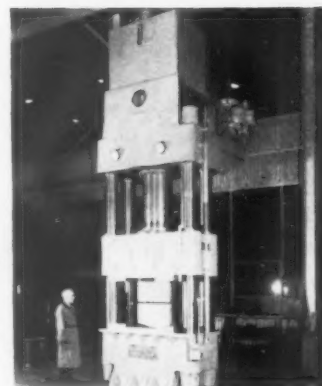
Dependable Products Since 1873 • Lockland, Cincinnati, Ohio  
IN CANADA: THE PHILIP CAREY COMPANY, LTD. Office and Factory: LENNOXVILLE, P. Q.

water turbines, paper mill calendar stacks and rolling mill machinery.

Defender metal stands shocks without cracking and is well suited for use in internal combustion engines, trap rock crushers and sifter machinery.

For steady high speeds and uniform loads such as are found in line shafting, electric motors of 10 to 250 hp., pumps and general machinery, the makers recommend their anti-friction metal.

### SELF-CONTAINED FASTRVERSE FORGING PRESS



■ For many years, the steam-hydraulic press has been the accepted type of press for forging hot billets. The reason for this acceptance was that the steam-hydraulic forging press had no competitor in the hydraulic press field. Such is not true today! This self-contained Fastraverse press made by the Hydraulic Press Manufacturing Company of Mount Gilead, Ohio, has "stepped into the picture."

Assuming that a decision has been reached and additional hydraulic forging press equipment is to be installed, the next question would naturally be whether to install steam-hydraulic presses or these presses. Before making this decision, certain questions will require answering. These will include—

1. What will be the comparative first cost of the two systems?
2. How will the maintenance costs compare?
3. Will the production efficiency be higher for one system than the other?
4. Will the operating cost be higher with the HPM system than if a steam system is used?

It is very evident that this press costs less to install than the steam-hydraulic press with its necessary auxiliary equipment—steam boiler, intensifier, accumulator and connecting piping and valves. Basically the design of the press proper is the same for both types of presses, with exception that a number of modern design features have been incorporated into this press. Primarily, though, the basic differences between the two types of presses will be found in the operating systems.

Part of the cost of the steam-hydraulic system must be based on the floor space necessary for installation and on the

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*Call Scully*

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Teletype PG. 475

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NEWARK, N. J.  
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# Let us help you *speed* war production

ALTHOUGH our stocks of steel are not what we wish they were, what we have can be yours in a hurry—subject, of course, to priority restrictions. If we don't have what you need, we will do everything possible to help you find a source of supply. Our first job, like yours, is to do everything we can to speed production that will help win the war.

"Scully Service" is on the job—in all of our eight conveniently located warehouses—day and night. Be sure to try Scully—see our phone numbers at the left. Cut out the number of the warehouse nearest you and paste it in a handy spot.



## ***IN STOCK!*** **DARDELET "RIVET-BOLTS"**

We can offer immediate shipment of both Dardelet "RIVET-BOLTS" and Dardelet Machine Bolts. These bolts save valuable time and labor and assure permanently tight joints.

The Dardelet "RIVET-BOLT" is a ribbed bolt with Dardelet self-locking thread, and is widely used for field erection of structural steel. Has recessed nut. Bolt is driven in and nut is applied with wrench. Economical and strong.

The Machine Bolt with Dardelet self-locking thread is for general use where vibration is present.



## **SCULLY STEEL PRODUCTS COMPANY**

*Distributors of Steel and Steel Products*

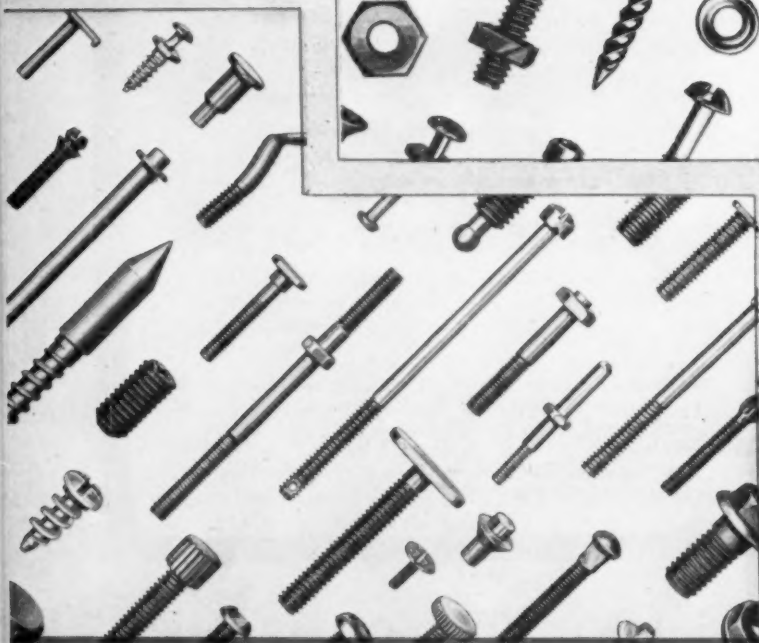
Warehouses at CHICAGO • NEWARK, N. J. • ST. LOUIS • BOSTON  
ST. PAUL - MINNEAPOLIS • CLEVELAND • PITTSBURGH • BALTIMORE

# UNITED STATES STEEL





Like the speedy, rugged, indispensable "Jeep" and other mighty midgets of war, **HOLTITE Screws, Bolts and allied fastenings** are called upon to do jobs far out of proportion to their size. With strength beyond ordinary demands, **HOLTITE** time-tested fastenings can be used in any assembly with full assurance of faultless, enduring performance. Specify them on your next order.



## SPECIALS

We have the most completely equipped plant for the production of special parts and fastenings. Specials of any kind can be produced on order. Precision is assured. Send specifications, sample or blueprint.

# CONTINENTAL SCREW COMPANY

New Bedford, Mass., U.S.A. Warehouse - Detroit, Mich.

## PURCHASING

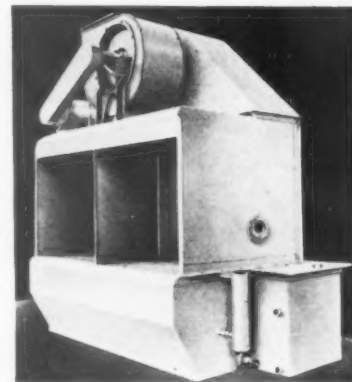
cost of foundations for the heavy boiler, intensifier and accumulator. With the "all hydraulic" self-contained system, there is no boiler, intensifier and accumulator. Only one foundation is required—that for the press, and the only floor space necessary is for the press itself, as the power unit is mounted overhead and out of the way.

Another problem that must be considered is the possible maintenance cost. The up-to-date self-contained HPM press has reduced maintenance cost almost to the vanishing point.

The only operating cost of the press is the electrical power required to drive the radial pump (or pumps).

Additional advantages of the system include:—The entire press operation is controlled from one hand lever. The press is closed rapidly by gravity and the press cylinder is maintained full of oil during the closing movement by the scientifically designed and HPM patented surge valve, thus permitting high speed closing. The pressure stroke follows up automatically with no appreciable time lag because the cylinder is already full of oil.

## MAGNESIUM BOOTH



Industries working with magnesium will be interested in learning about the further developments that have been made in the Hydro-Whirl magnesium booth made by Industrial Sheet Metal Works, Detroit, Mich. The factor of safety has been stepped up even beyond its former high efficiency, and the design also has been improved, on which patents have been issued.

Instead of being made of steel, the bench-high grating of the compartment where the work is done is made of hardwood, which will not produce sparks if struck with a grinding wheel or tool. Thus, the possibility of having sparks ignite the magnesium dust created by the grinding, buffing, or polishing operations performed within the booth is removed and danger of fire is practically eliminated. As an added protection against spark ignition, the booth sections are lined with Masonite.

An automatic control maintains the water level at a uniform height in the tank below the grating. Thus the tank will never run dry to endanger the safety of the operator.

*Accurate Springs*

**WHAT TYPE  
DO YOU NEED,  
HOW MANY  
AND  
WHEN?**

**I**f one of your problems is springs—dependable springs, that you must have in reliable quantities to keep your production at its peak—perhaps we can help you.

With our organization running in smoother-than-ever form we are producing more and faster and better products—to help you produce more, faster and better. We've learned short cuts and through

experience have accumulated "know how" that is saving much time, trouble and headaches.

That is why we feel that your seemingly tough spring problem may find an easy answer here at Accurate. If you will show us what type—how many—and when you need springs or wireforms, we'll come up with answers you may find pleasantly surprising.

Send for the new Accurate "Handbook of Technical Data".  
It's handy, compact, informative. You'll be glad to have it.

**ACCURATE SPRING MFG. CO., 3825 W. Lake St., Chicago, Illinois**

*When writing Accurate Spring Mfg. Co. please mention Purchasing*



## Wash-up strategy helps speed production

LAN-O-KLEEN\* offers far-sighted management a real PLUS value in promoting employee good will and fighting dermatitis.

Unlike harsh soaps, LAN-O-KLEEN is an effective hand cleanser which acts TWO ways. First, it gently removes 95% of all soils encountered in industry. Then it "Work-Conditions" the hands.

For Lan-O-Kleen is a soap with a corn-meal base, impregnated with pure LANOLIN. Thus Lan-O-Kleen puts back on the hands an oil almost identical to those secreted by the glands in the skin. This helps nature to maintain a normal, healthy skin condition. And healthy hands are less liable to become infected.

THINK IT OVER! Is it worthwhile to improve the condition of working hands—provided your soap cost is no more than it is now? There's a quick way to find out! Clip this coupon to your business letterhead . . . AND TRY LAN-O-KLEEN YOURSELF. You'll find it worthwhile.

★ For Workers in Contact with Skin Irritants West Manufactures a Complete Line of SKIN-PROTECTIVE CREAMS after formulae especially created to meet certain conditions. Our home and branch office staffs will be glad to discuss your needs for a standard or custom-made product of this kind.

\*Trade Mark Reg. U. S. Pat. Off.

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SERVING AMERICAN INDUSTRY FOR OVER 50 YEARS

55 BRANCHES  
*Coast-to-Coast*  
and in Canada

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Please send me your latest bulletin on

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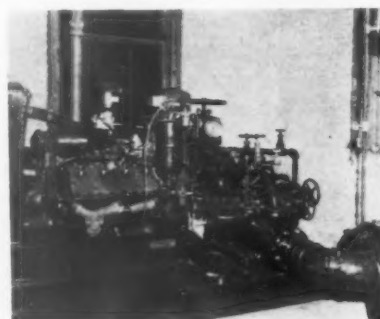
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W-30

When writing West Disinfecting Company please mention Purchasing

## SPECIAL DUTY PUMP UNITS

■ Dangers of incendiary bombs has brought to home owners, factory managers and municipal officials alike the importance of ever-ready pumping equipment in case of fire.

Recently developed fire pumping units by Fairbanks, Morse & Co., Chicago, Ill., now afford small plants and towns adequate fire protection at a moderate cost. In the past small plants and municipalities have found that standard pumping station equipment has been too expensive and too complicated for their means and needs.



New Mercury engine-driven Fairbanks-Morse Underwriters approved Fire Pump.

One of these new fire pumping units, approved by the Underwriters Laboratories was recently installed in Delavan, Wisconsin. It is composed of a 4-inch figure 5813 fire pump driven by a Ford-Mercury engine. The Mercury engine drive, turning at 2500 r.p.m., is of sufficient speed to be direct connected, eliminating the expense of gear drive necessitated when a slow speed engine is connected to a high speed pump. This simplicity represents a great saving in installation and maintenance costs over regular fire pump units. As an added advantage to the City of Delavan and others who will soon have this equipment, there are service stations with stocks of replacement parts for the Ford engine in practically every village in the country.



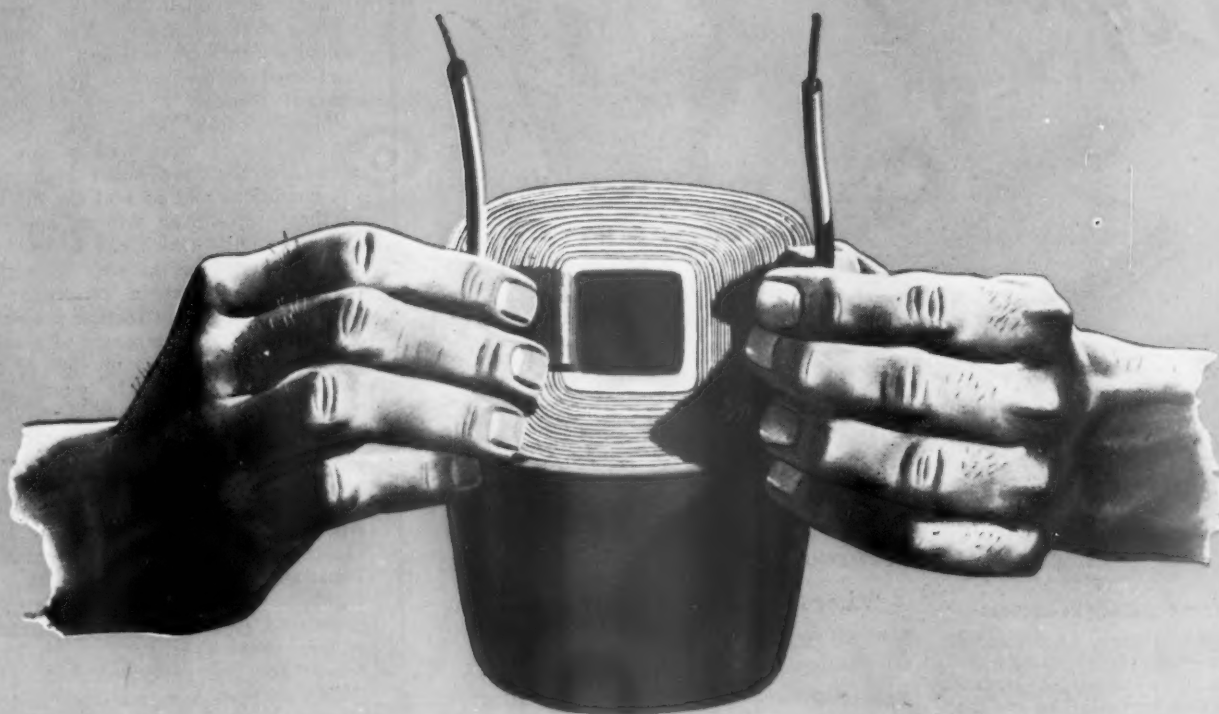
New Portable Pumping Unit (electric motor driven) developed by Fairbanks-Morse.

In response to considerable demand, they have also developed a portable pumping unit which may be adapted to a variety of service, municipal and otherwise.

A good example of this type of unit was recently assembled for Waverly,



If your coil department has its hands full...

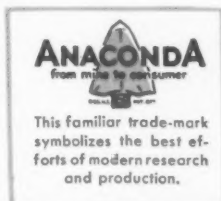


*Anaconda Can Help!...*

Anaconda's Central West plants still have unfilled capacity on magnet wire and coil production... *for war work*. In addition to these facilities, they have experienced personnel to help solve problems you might have with this phase of manufacture.

Here is an opportunity to release your time so that it can be devoted to other important problems. Our sales offices, located in all principal cities, are near you. Call today. A representative will be glad to discuss your problem.

GENERAL OFFICES: 25 Broadway, New York City  
CHICAGO OFFICE: 20 North Wacker Drive  
Subsidiary of Anaconda Copper Mining Company  
Sales Offices in Principal Cities



This familiar trade-mark symbolizes the best efforts of modern research and production.

### These Improved Insulations Are Now Available Nylon—Vitrotex—and Formvar

The commercial development of Nylon and Vitrotex insulations is in part the result of Anaconda research... research that continues with redoubled effort producing new products for war work. Of course, when peace comes, the benefits of this research will be ready for industry everywhere.

42264



*Magnet wire and coils*

**ANACONDA WIRE & CABLE COMPANY**

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# "Skilled" Lighting



## to boost skilled output!



### RLM DURATACH REFLECTORS

Made in Dome, Angle and all other standard types. Wheeler Duratach construction provides for quick installation and easy interchangeability of reflectors.



### RLM SOLID NECK REFLECTORS

Made in Angle, Dome and all other standard types. Recommended for indoors or outdoors where interchangeability is unimportant.



### WHEELER VAPOR-TIGHT FIXTURES

Made in all standard pendant and ceiling types. Designed to resist deteriorating effects of vaporous and atmospheric conditions.

*Wheeler-engineered Lighting "sharpens" eyesight, increases accuracy of production.*

Wherever workers' output must meet new high wartime tolerances, up-to-date lighting offers immediate opportunities for better, faster production. For such modernizations, you can't get better-engineered fixtures than Wheeler's!

### Developed by Specialists

Wheeler Lighting Equipment is designed by specialists with over 60 years' experience. It's "skilled" lighting that applies standard lamps with maximum efficiency. Every unit meets top standards of design, material and workmanship.

### Complete Selection

All your requirements can be supplied by Wheeler's complete line. Wheeler engineers will help you plan the right installation. Write for catalog of Wheeler Incandescent or Fluorescent Fixtures. Wheeler Reflector Company, 275 Congress Street, Boston, Mass. . . . New York, Cleveland. Representatives in principal cities.

*Distributed Exclusively Through Electrical Wholesalers*

# Wheeler REFLECTOR COMPANY

Lighting Equipment Specialists Since 1881

Ohio. A 2-inch non-clogging sludge pump was direct connected to a 3 hp. splash-proof motor and mounted on a standard warehouse truck with 8-inch rubber-tired wheels.

The pump is primed by means of a hand-operated bracket-type pump mounted on the truck platform with its suction connected to the top of the volute through a 3/4-inch pipe line equipped with a shut off valve. The sludge is picked up through a length of 2 1/2-inch wire-lined rubber suction hose and discharged through a length of 2 1/2-inch collapsible cotton fabric hose. The discharge hose is fitted with a gate valve to control the head under high suction lift conditions and to seal the discharge of the pump during priming operations.

Such a unit—which can be used with their other pumps as well as with the sludge pump—meets a variety of very real needs. On construction projects, at any place where temporary drainage is necessary, and for any number of other tasks where a portable pump is required this compact unit is ideal.

### HIGH-IMPACT PLASTIC

■ A high-impact plastic of the phenolic type was recently announced by Durez Plastics & Chemicals, Inc., of North Tonawanda, New York. Increasing demands for heavier duty molding compounds to replace other vital materials in war production are said to be the reason for the development of Durez 11934, as this new material is to be known. It has a macerated fabric filler and consequently is not readily preformed. It has an impact strength of 2.0 and a specific gravity of 1.44. It is said to have a very good cure cycle for a material of this type and is available in black or brown color. This material will meet the special impact requirements that are required for such applications as small pulley wheels, casters, rollers, etc.

### BURRING TOOL



■ An entirely new burring tool that is particularly effective and valuable in removing burrs from the inside edges of multi-walled parts has just been announced by the Nobur Manufacturing Company of Hollywood, California.

This burr removing tool cuts finishing time to a minimum by eliminating slow and costly hand methods of burring. The tool is simple in construction and operation. Used in a drill press, lathe or

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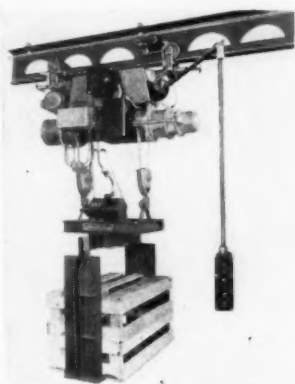
other machine spindle this new burring tool is kept in continuous motion while parts are fed to it as fast as the operator can handle them. It consists of a cylindrical shaft which pilots in the hole to be de-burred—to one end of the shaft is fastened a knurled collar. This knurled collar is a free-rolling ball bearing unit that can be grasped and held by the hand even while the shaft is rotating. By sliding the collar up or down the burring blade may be advanced into cutting position or withdrawn.

This tool can be handled by "green trainees" or women operators with speed and accuracy, and its smooth, clean cutting action will pass the most critical inspection.

The cutting blade is of special tool steel, and can be easily and quickly removed for re-sharpening and when completely worn down it can be replaced. All essential parts are case hardened and ground.

It is available in 1/16" progressive sizes—from 3/16" to 1". Additional sizes and special tools can be furnished upon application.

#### CRATE GRAB AND CARRIER



■ One of the latest developments of the Cleveland Tramrail Division of The Cleveland Crane & Engineering Co., Wickliffe, Ohio, is the motor-driven crate grab and carrier especially designed for handling crates and boxes in and out of storage, or from one elevation to another. The unit enables the quick stacking or removal of crates at a great height with safety. This makes possible faster handling, and also greater storage capacity of a given area.

The grab and carrier are completely motorized with all operations conveniently controlled by the six buttons of the push-button station. If desired this type unit can be provided with an operator's cab in which all controls may be located.

The arms of the grab are extended and retracted by means of geared slide bars that are driven by the motor mounted on top of the grab. Power is supplied to this motor through a flexible cable that is held taut by a spring-type retrieving reel.

A double-hook cable type electric hoist elevates and lowers the grab with very little swing, making it easy to spot it as desired. A quick acting electric brake

**IT'S TOUGH!**  
— stands up under the abuses of high speed winding machines

**IT'S COMPACT!**  
— permits the use of more copper in less winding space

**IT'S SIMPLE!**  
— eliminates protective coverings, simplifies varnish treatments

**ROEVAR**  
*the new Synthetic Resin insulated*  
**ROEBLING**  
*Magnet Wire*

It's a big step forward in magnet wire insulation! Here are the advantages of Roebling ROEVAR Magnet Wire in a nutshell:—

**Low cost**—generally less than enameled, fabric-covered types.

**Smaller**—allows more copper in the same space,—the same amount of copper in less space than the enameled, fabric-covered types.

**Flexible and abrasion resistant**—retains its flexibility and maintains its dielectric strength under high tension and abuse of severe winding conditions.

**Eliminates need for cotton** or other protective coatings—reduces the amount of treating varnish used after assembly—is not affected by the action of asphaltic compounds, naphtha and other varnish solvents.

If you have a winding problem, ROEVAR may provide the solution.

**ROLL 'EM UNDER**



**JOHN A. ROEBLING'S SONS COMPANY**

(Licensee)

TRENTON, NEW JERSEY

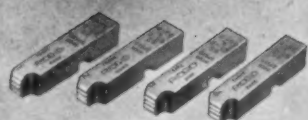
Branches and Warehouses in Principal Cities



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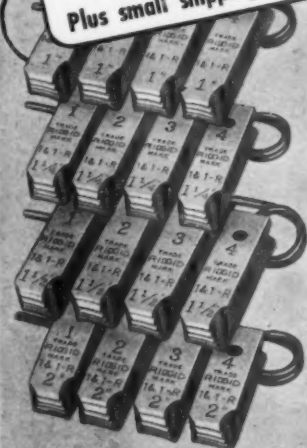
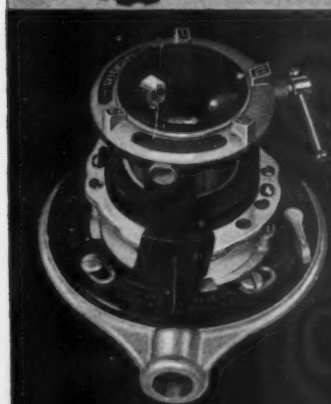


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Dies for **RIGID** No. 65R Series

Your **RIGID** dies  
Factory Reconditioned  
**44¢** PER SET  
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Series

## FACTORY RECONDITIONING of **RIGID** Wrench Jaws and Chaser Dies

Big Saving To You, New Parts Guarantee

*No Priorities Needed*

*This Service Available Only in U. S.*

### Here's What You Get

- 1 Careful inspection of the parts you send us, to make sure they are worth reconditioning. We reserve the right to reject them for service if they can't be made as good as new.
- 2 Wrench jaws to be scientifically annealed in our automatic electric furnaces, same as new jaws.
- 3 Wrench jaws to be recut in the same machines and by exactly the same methods as used for new jaws. Chaser dies are accurately re-ground to original specifications.
- 4 Wrench jaws are then rehardened, like new.
- 5 Both wrench jaws and chaser dies are given final inspection—and returned to you under regular **RIGID** new part guarantee of satisfaction.

### Here's What You Do

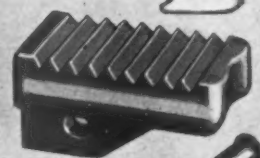
Collect all your old worn **RIGID** Wrench Jaws and Chaser Dies and turn them over to your Supply House with order for this Reconditioning Service. Your Jobber ships them to us with parts accumulated from other customers, to save shipping expense, for we allow one-way freight to Jobber on lots weighing 100 pounds or more. Remember: *only RIGID trademarked parts accepted for service.* No priorities needed. Service is prompt. Keep your **RIGID** Tools on the job—order today.

THE RIDGE TOOL CO. ELYRIA, OHIO

# **RIGID**

Pipe Wrenches, Cutters, Threaders, Vises

**Work-Saver Tools for America's Big Job in 1942**

**RIGID**  
Wrench  
Hookjaw**RIGID**  
Wrench Heeljaw with pin

*When writing The Ridge Tool Co. please mention Purchasing*

stops and holds the load wherever desired.

The unit illustrated will handle one or more boxes at a time. It will lift loads up to 1500 lbs. a distance of 20 feet. The arms may be spread to a maximum of 36 inches and retracted to a minimum of 18 inches. Similar units can be built for heavier loads and to suit other dimensions.

### STEEL WELDING INSTALLATION



■ A standardized flexible installation for the production spot welding in assembly of light-gauge aircraft steels, including stainless steel types, has been developed by Progressive Welder Company, Detroit, Mich. Incorporating a number of

## PERMAG

### Cleaning Compounds

—best for

### ALUMINUM

Removes oils, grease, buffing compounds, paints, finishes from aluminum rapidly and economically—never attacks the metal.

PERMAG Compounds are highly efficient for **CLEANING**

- Sheet Aluminum and Cast Aluminum prior to Anodizing
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Write for details and prices. Ask about MAGNUSON Cooperative Service.

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## SMALL GASOLINE MOTORS HELP MAINTAIN *Vital* COMMUNICATION LINES!

On the front lines, as well as behind the front, our country's war program depends a great deal on constantly keeping communications open. Here again, as in many other branches of military and civilian service, Briggs & Stratton 4-cycle, air-cooled gasoline motors ranging from 2/3 to 6 HP, play a vital role, furnishing dependable power for many uses.



Today, all the manpower and the production facilities of the Briggs & Stratton organization are devoted to the war program.

To the hundreds of thousands of civilian users of Briggs & Stratton motors we suggest that the life of the motors they now have can be prolonged — their performance kept at peak, by proper care and inspection and replacing broken or worn parts.

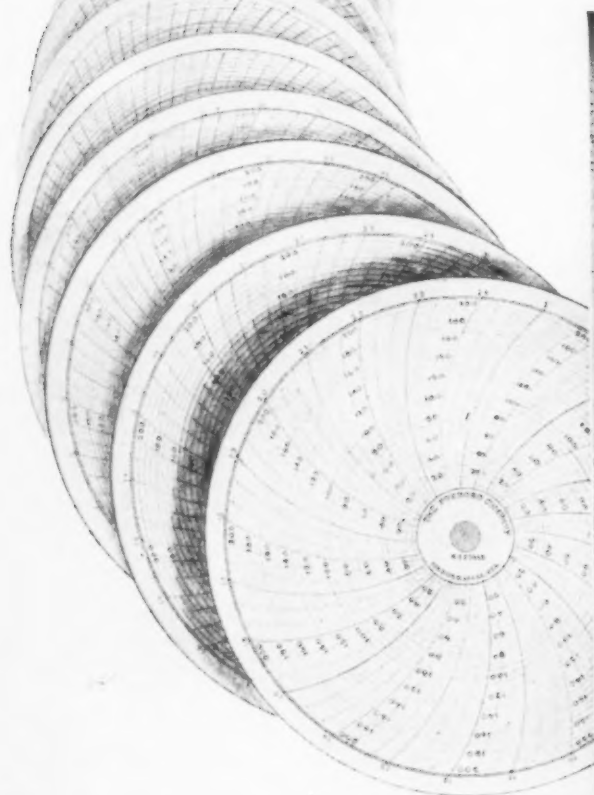
See your local dealer or an Authorized Service Station.

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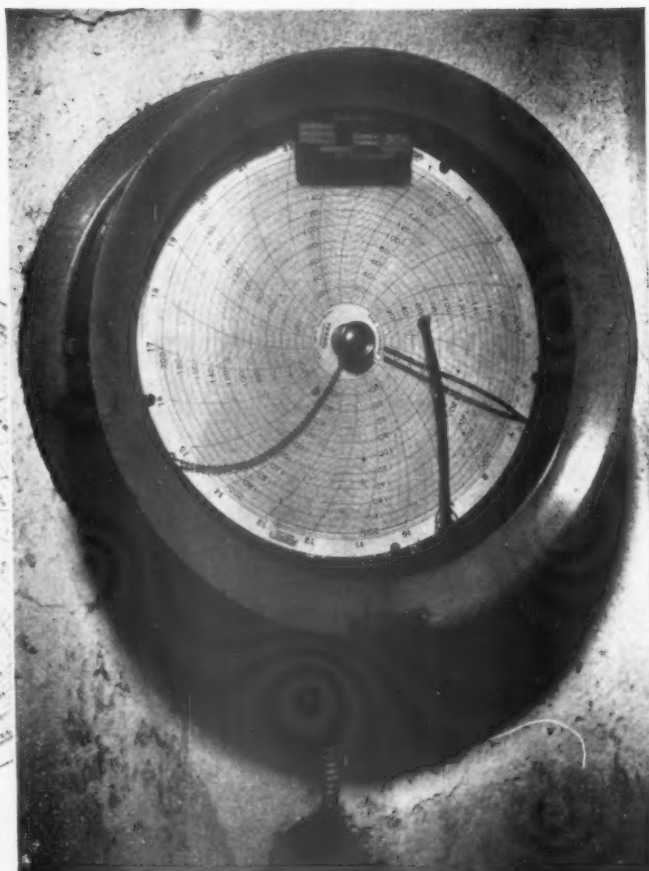


**That's what this veteran  
Foxboro Recorder gave to  
one manufacturer!**

Ask the Cleveland Fruit Juice Company whether they consider it essential to keep records of processing conditions. Their own past practice gives the most conclusive answer!

Every working day for 25 years, this company has kept a continuous record of one critical process temperature. Simply through use of the Foxboro Temperature Recorder shown here, costly guesswork has been eliminated. And this veteran instrument is still in perfect calibration . . . still supplying exact production guidance every day!

No matter what part of your operation demands "close" control, its efficiency is bound to benefit



Every day for 25 years, Cleveland Fruit Juice Company has used this Foxboro Recorder to guide production!

from the certainty supplied by Foxboro Recorders. Automatically, you get the exact facts about each run to help you save steam, materials and costly re-runs. Uniformity can be assured.

Write for detailed bulletins on Foxboro Recorders for Temperature, Pressure, Flow or Humidity . . . recorders that give sustained accuracy without servicing. The Foxboro Company, 178 Neponset Avenue, Foxboro, Massachusetts, U.S.A. Branches in principal cities of the United States and Canada.

**FOXBORO**  
REG. U. S. PAT. OFF.  
*Instruments*

*When writing The Foxboro Company please mention Purchasing*



unusual features—such as refrigerated electrodes, variable throat-depth, and welding transformer built right into a light weight welding gun—the welding installation includes a jib crane with 6-foot trolley-type arm.

Being completely self-contained, with all units mounted on, or suspended from the jib crane, the equipment is exceptionally easy to install and provides a wide area over which the equipment may be used—particularly useful in working on large assemblies or in combination with moving conveyors.

As an additional flexibility feature, the gun hanger is so designed that the gun may be swiveled 360 degrees in any plane, facilitating welding in normally hard-to-get-at places on an assembly.

#### PINCH-HITTING FOR RUBBER RUNNER

■ Substitute materials are being utilized with increasing success to replace many products of rubber now unavailable for the thousand and one daily uses previously found for this almost indispensable material. Service obtained from many of these alternate materials compares favorably, in most respects, with that of rubber products.

One substitute, an asphalt composition material, has been found highly satisfactory for floor runner and mats and is immediately available for delivery.

Designed to prolong the life of floors

## More Than Savings



**for You ..**  
In Protecting  
Busy Hands with  
**Stanzoil  
Neoprene  
Gloves**

Stanzoils save you disability claims by protecting workers' hands from injury by oils, greases, caustics, acids, solvents ... and often last 3 to 7 times as long as rubber gloves (if you can get them!).

But the big value these amazing neoprene Stanzoils give you is more production from comfortable hands that are safe from chemical burns or infections.

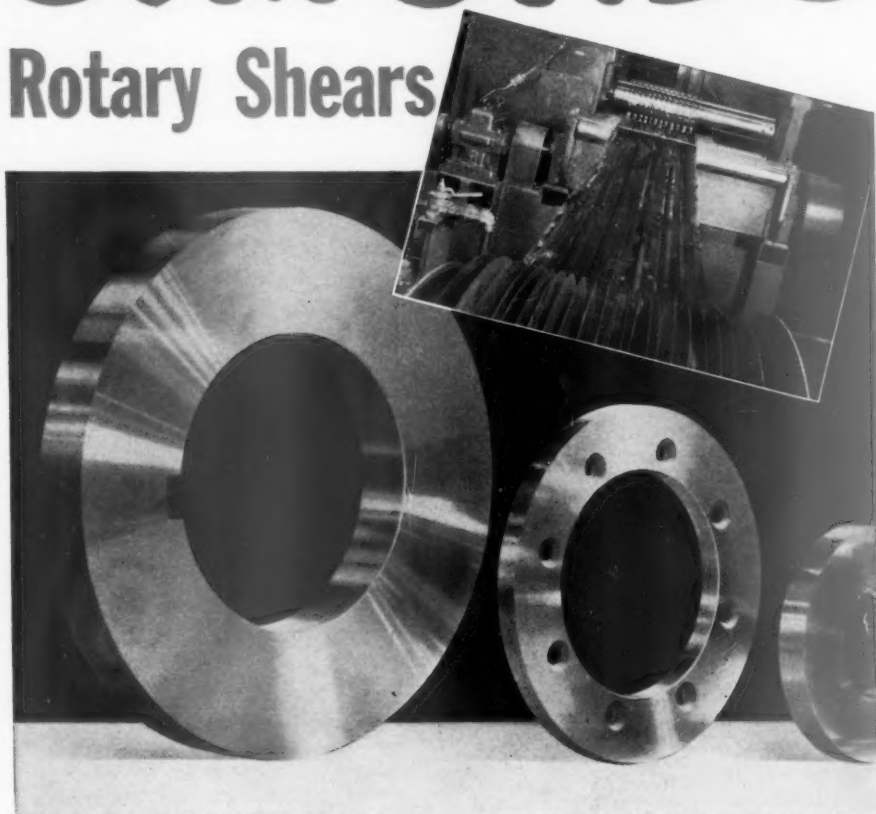
Stanzoils of DuPont neoprene are not stiff, do not retard fingers, are comfortable, give better protection. Black and white, full range of sizes. Write for current information about deliveries.



Synthetic Rubber Division of  
**THE PIONEER RUBBER CO.**  
257 Tiffin Rd., Willard, O., U.S.A.  
New York • Los Angeles

**MADE WITH DU PONT NEOPRENE**

# Cut Time and Set-Ups with long-lived **SIMONDS** Rotary Shears



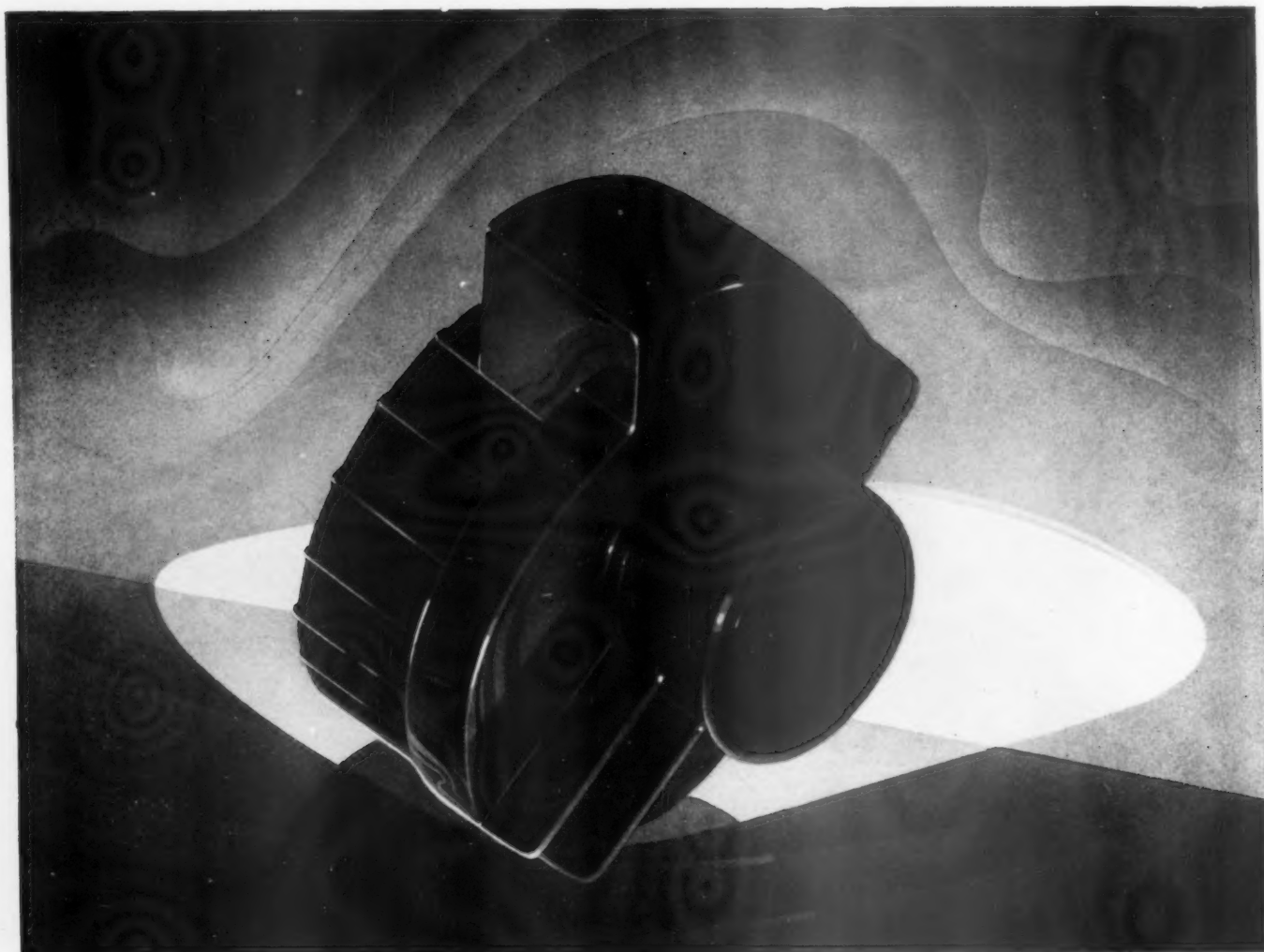
FOR CUTTING THIN METAL, Simonds Rotary Forged Shear Blades are tops in long service, accuracy and output. These blades are forged before heat-treating, to add toughness which means long-

er service between grinds ... and that saves important set-up time. Simonds grinding methods permit exceptionally close tolerance, plus or minus .00025". Write for details on these quality cutting tools.



**SIMONDS SAW AND STEEL COMPANY, 470 MAIN STREET, FITCHBURG, MASS.**

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## Here is something new for the "Son of Heaven"

SOMETHING new under the sun? Yes, sir!—lots of new products to speed up the drive against the Japs . . .

New parts like this (for the time being their use cannot be revealed) are made possible by the use of INSUROK Precision Plastics. This part is but one of many new war-designed products developed by Richardson Plastics.

Because Laminated INSUROK can be machined to close tolerances

with existing equipment, it facilitates sub-contracting—saves other critical materials for other important uses. Molded INSUROK, too, is serving with the air, land and sea forces because of its versatility and ability to meet the problems of the hour better, faster.

*The Richardson Company, Melrose Park, Ill.; Lockland, Ohio; New Brunswick, N. J.; Indianapolis, Ind. Sales Offices: 75 West St., New York City; G. M. Building, Detroit.*

**INSUROK and the experience of Richardson Plastics are helping war products producers by:**

1. Increasing output per machine-hour.
2. Shortening time from blueprint to production.
3. Facilitating sub-contracting.
- ✓ 4. Saving other critical materials for other important jobs.
5. Providing greater latitude for designers.
6. Doing things that "can't be done."
7. Aiding in improved machine and product performance.

# INSUROK

*When writing The Richardson Company please mention Purchasing*

subject to heavy traffic, this product is said to be an inexpensive and durable, protective runner for stores, offices, theaters, halls, recreation rooms and in model and demonstration homes. As useful as rubber floor runner and similar in appearance, this corrugated floor runner sold in good volume even before rubber became unavailable.

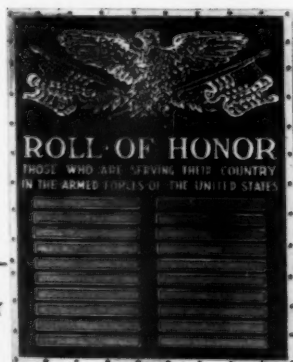
Corrugations or ribs form a non-skid surface to provide firm footing, an effective aid in wet weather. Where water collects on floors, as in washrooms, basements, corridors and lobbies, this runner serves a useful purpose. Easily handled, it lays flat and will not hump. It is available in rolls 36 inches wide and 30 feet long.

Companion products made of the same material are corrugated floor mats, for small areas, in sizes 2' x 3', 3' x 4', 3' x 6', and corrugated treads, for stairways, in sizes 9" x 18" and 9" x 24".

Developed by their research department, these are products of The Philip Carey Manufacturing Company, Lockland, Cincinnati, Ohio.

#### ALL-SPRAY NOZZLE

■ To meet the demands for a variable, all-spray nozzle, without a straight stream, a new water spray nozzle has been introduced by American-LaFrance-Foamite Corporation, Elmira, N. Y.



#### THE NURRE HONOR ROLL PLAQUE

*A Beautiful and Fitting Tribute to the Men Who Are Serving Their Country!*

Made of polished plate glass, with design and lettering etched into the glass and silvered, a sparkling contrast to the deep blue background. The Nurre Honor Roll Plaque has a rich beauty and permanence that makes it appropriate to the finest surroundings. Names are inscribed on a convenient removable panel so that new names may be added at any time. Two sizes, 14 x 18 inches and 18 x 34 inches with places for 20 and 42 names respectively are available, priced at \$15 and \$20.

Write Today for illustrative circular.

#### THE NURRE COMPANIES, INC.

Bloomington, Ind.      Dubuque, Iowa  
Memphis, Tenn.      Egg Harbor City, N. J.

# ARTERIES for PRODUCTION'S "LIFEBLOOD"

*made to order—fast!*



GRINNELL provides the means for converting a *pile* of pipe into a piping *system*... a vital artery to furnish Power... Fire Protection... Heat... Fuel... Air... Water... Humidification in a plant, a ship, a tank or a plane.

Taking the OFFENSIVE against delays in production, Grinnell has stepped up its facilities to handle all requirements "whenever piping is involved" — *faster*. Included are pipe prefabrication for power and process lines, automatic sprinkler fire protection, cast and malleable iron fittings, pipe hangers for every condition, welding fittings, heating specialties and humidification systems. Grinnell Co., Inc., Executive Offices, Providence, R. I. Branch offices in principal cities of U. S. and Canada.

*Don't let  
delays occur  
— call upon*

## GRINNELL

WHENEVER PIPING IS INVOLVED

Grinnell Company, Inc. • Grinnell Company of the Pacific • Grinnell Company of Canada, Ltd.  
General Fire Extinguisher Company • American Moistening Company  
Columbia Malleable Castings Corporation • The Ontario Malleable Iron Company, Ltd.



From the shut-off position, a slight turn of the tip immediately gives a cone spray of 40 degrees. Further slight rotation produces increasing cones up to full curtain of 150 degrees, with reversal back to shut-off without any intervening straight stream. This model finds favor with many public utility companies, as it prevents any possibility of a solid water stream being applied inadvertently on live electric circuits. The varying cones are also excellent for extinguishment of heavy oil fires, and for general cooling purposes.

The nozzle is known as model 10F. It can be furnished for any 2½" hose thread, also for Underwriters' tip thread,

2" hose thread, or 1½" thread.

In the 40 degree spray position, the capacity is about 95 g.p.m. and 135 g.p.m. at 50 lbs. and 100 lbs. inlet water pressures respectively. The full curtain capacity at these pressures is approximately 170 g.p.m. and 215 g.p.m.

The nozzle in the full curtain position provides an effective water screen to protect men and property behind it. It proves more effective on Class A fires (wood, rubbish, textiles, etc.) with spray discharge, than straight bore nozzles, because the finely divided particles of water discharged in the form of a spray will allow absorption of a far greater amount of heat than a like quantity of

## PURCHASING

water delivered in a straight stream.

The Alficospray will cool and protect buildings, tanks and other structures that are menaced by exposure hazard. It will knock down heavy smoke, and dissipate poisonous fumes.

## WEATHERPROOFING PREFABRICATED METALS



■ An improved method of weatherproofing prefabricated metals and shapes has been introduced by the Coated Products Corporation, Verona, Pa. This process, by the utilization of "Plastipitch" replaces galvanizing, and rolled bituminous applications for weatherproofing and protecting metals against corrosive atmospheric conditions. It thus releases zinc ordinarily used for galvanizing which is vitally needed for war purposes. The process uses a pitch of improved plastic characteristics. This pitch is used in a simple bonding process to weatherproof completely all types of metals of various sizes, shapes, forms, or gauges.

In this process only prefabricated or preformed metals are used. No further shaping or forming is required after the "Plastipitch" application is completed, thus avoiding possible rupture of the coating bond and strains in the metal which may result from further mechanical processing.

An outstanding characteristic of the process is its ability to provide special climatic or weather resistant qualities as may be required to meet arctic or subtropical conditions. This is accomplished by appropriately modifying the "pitch" before application to the metal to produce a coating that will not become brittle or chip off at low temperatures, or melt and flow at high atmospheric temperatures.

These materials are available in various types of finishes and in a variety of colors, fineness, and quality of mineral surfaces. Also because of the elimination of many steps formerly required in the older methods they are very economical to use.

## PENCIL FOR MULTIPLE CARBON COPIES

■ Today, when multiple records are so important, it is good news to know that the problem of "What pencil to use for making multiple carbon copies?" has now been solved.

The bottleneck has always been that a pencil hard enough to make an impression through five or six carbons would



## SABOTAGE

### Can start on the drawing board

Inferior tracing cloth can sabotage your drawings just as effectively as enemy agents.

And it's so easy to be fooled! You'll find the lowest-grade tracing cloths clean and transparent when you buy them. But try making blue prints a year or two later. The cloth will be brittle—yellow—so opaque your drawings are blotted out.

Don't take this chance! We know how much time and sweat you put into a drawing. That's why Arkwright Tracing Cloths are highly transparent—and made to stay that way, to give your drawings permanent protection. That's why Arkwright has been recognized as the leading American manufacturer of tracing cloth for over twenty years. Next time you order, specify Arkwright. Arkwright Finishing Company, Providence, R. I.

*Arkwright* TRACING  
CLOTHS

When writing Arkwright Finishing Company please mention Purchasing



## UNSUNG HERO!

For years he's been making a living out of what you so smugly call "junk." Gathered up what *you threw away* . . . paid money for it, even. Recognized the importance of it, located it, invested in it, hauled it, sorted it, prepared it, stored it. Thank God he did.

Today the SCRAP collector is almost the No. 1 man on the blitz parade. Pin a medal on him, if you want to reward public service!

*He just about doubles steel production!*

For, every ton of scrap he feeds to the hungry maw of the steel furnace, combined with smelted iron, yields approximately *twice the amount of new, better steel*. For twice as many ships, tanks, guns, planes, shells and other weapons of Victory! Or in peace days, *double the abundance of automobiles, refrigerators, washing*

machines, radios and other contributions of industry to the comfort and progress of a free America.

Scrap collectors and dealers, the country over, are cooperating with Salvage for Victory campaigns . . . willingly paying individuals or patriotic organizations for scrap thus obtained. But *every day* . . . in between civilian drives . . . they continue the search for scrap in their own established, systematic way!

You can help them to *get in the scrap!*



# Pittsburgh Steel Co.

GRANT BUILDING PITTSBURGH, PA.

cut through the top copy, and would make a light and hardly legible original. On the other hand, pencils with soft lead are strong enough to withstand the pressure necessary for copying.

This new pencil is made by Reliance Pencil Corp., Mount Vernon, N. Y. and is called: #700 DUROLead multiple carbon copy. It is the only black-graphite pencil especially created for manifold carbon copying (easy to erase—no smudging from moist hands).

There are three degree-gradings: #700 medium—for blackest original and average number of carbons, #700 firm—makes a black original, a large number

of carbons and #700 hard—makes a light original, a very large number of carbons (8 to 10).

These pencils are available through stationery dealers and are sold by some manifold companies and salesbook manufacturers.

### BRONZE VALVES

■ The Fairbanks Company, New York, N. Y., are introducing a line of Fairco-seal bronze valves which contain pre-inserted rings of Sil-Fos silver brazing alloy in the port openings, instead of threads. With this design, valve and

pipe can be easily brazed together into a one-piece piping assembly by the application of an oxy-acetylene flame. When valves are connected to brass, copper or copper-nickel pipe, a "Silbraz" joint is formed.

Silbraz joints are designed to withstand tension, compression, torsion, vibration and corrosion to the same degree as the pipe or tube with which they are used. These joints are silver brazed joints, not soldered joints.

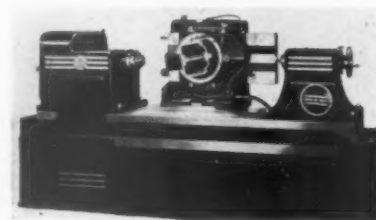
The joints have high tensile strength and will not pull apart at any temperature to which the valve or pipe can be safely subjected. The composition of the brazing alloy is such that the corrosion-resistant quality of the complete joint is the same as the parts joined.

They do not depend on wicking, solder or pipe dope to effect a water or gas-tight seal, as both pipe and valve are brazed together as one piece.

With these bronze valves, copper, yellow or red brass, copper-nickel and Monel pipe can be used.

The valves can be used successfully with steam, oil, hot or cold water, compressed air, acid, Freon, sulphur dioxide, etc.

### ROTARY GEAR SHAVER



■ Capable of handling gears up to 36 inches in diameter, a new rotary gear shaver utilizing the crossed-axis principle of gear finishing is now being produced by the Michigan Tool Company, Detroit, Mich. The shaver is similar in general design to the 865-48A announced recently and is designated as the 865-36A.

As on the larger machine, work on the 865-36 is driven, the cutter in engagement with the gear "following" the gear. The machine is equipped with two driving spindles.

Three methods of finishing gears are available in the new machine. In the first method, particularly suited to finishing of wide face gears, the cutter in addition to having an infeed toward the gear is also reciprocated parallel to the axis of the gear.

In the second method, used for quick finishing of gears having a narrower face width than the cutter, the slide is set vertically, the cutter however being in the same relationship to the gear as in the first method.

The third method represents a combination of the first and second methods. The cutter slide is again vertical, but infeed is used, the cutter head reciprocating vertically instead of horizontally as in the first method, the gear being finished by a number of vertical "passes" instead of one as in the second method.

## CONTINENTAL BULLETIN



### WORKING UNDER PRESSURE

Every day—almost every hour—brings new problems in the war production program. More and more goods must be turned out—often with less material to work with. Almost every manufacturer has the job of coming through on time so that other war industries are not thrown off schedule.

That takes plenty of sweat in the shop and constant good planning by the management. Ingenuity and resourcefulness are at a premium as never before—for America is again showing its native genius to solve the impossible problems almost as fast as they arise. This is the way the war will be won, and even though it entails temporary sacrifices, it is a small price to pay for Victory.

From Factory Bulletin Board of the

# CONTINENTAL RUBBER WORKS

MAKERS OF THE VITALIC LINE SINCE 1903  
ERIE, PA., U.S.A.



THE HAND OF THE SPECIALIST IS OFT  
REVEALED IN LITTLE THINGS  
\*of BIG importance

When writing Continental Rubber Works please mention Purchasing



### STIRRUP PUMP BARREL



■ The barrel pump extinguisher consists of a twenty gallon barrel, mounted on wooden wheels in such a manner that it can be trundled to the place of use. If it is necessary to carry it from floor to floor, two handles are conveniently attached so that two people can carry it up the stairs. The top of the barrel is fitted with a hinged cover so that twenty gallons of water can be poured into the barrel, after which the water-tight, hinged cover is closed. A stirrup type of pump is fitted into the top of the barrel, and to this pump there is attached a twelve foot length of hose with a nozzle that will allow for adjustment of the spray. To the side of the barrel there is conveniently attached an axe for use as required. The entire assembly is painted a bright yellow for most visibility in the dark, and can, if desired, be painted with luminous paint at an additional cost. Imprinted on the front of the barrel are the large black letters FOR AIR RAID USE ONLY.

The advantage of this barrel type stirrup pump over the conventional or four gallon type, is its immensely larger water capacity, its convenience in trundling it to point of use, and its simplicity of assembly.

It can be readily stored in the corners of floors of industrial plants, office buildings, apartment houses, garages, homes, and if checked periodically, like fire pails, for water capacity, it will be ready for instant use in event of air raids. Product of Specialties Manufacturing Company, Inc., of Bloomfield, N. J.

### HYDRAULIC EXTRUDING PRESS

■ Beatty Machine and Manufacturing Company, Hammond, Indiana, has announced an improved hydraulic extruding press, with high production capacities.

The new model is a self-contained unit with a rigid one-piece frame that eliminates the need for tie rods. Cylinders are mounted horizontally to provide easy access to the loading chamber. The duplex pumping unit provides for rapid movement of the plunger on advance and return stroke, a variable speed control feeds material at the rate required for

various sizes of electrodes.

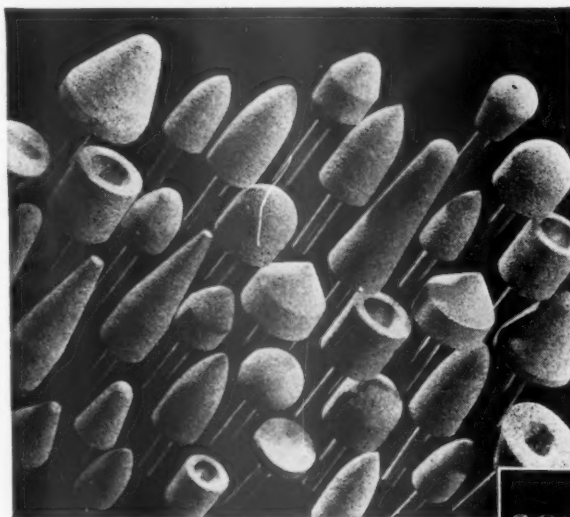
The material cylinder is made of cast steel and lined with a renewable heat treated, pressure tight iron liner. The complete press is designed to give a working pressure of 10,000 P. S. I. on the coating material in the material chamber. A manual adjustment within easy reach of the operator gives pressure and velocity changes as required. Each press is equipped with duplicate heads which can be alternated by removing the coupling pin. In this way no time is lost during renewal of packing.

The press is actuated by a double acting hydraulic cylinder which eliminates

outside pull back cylinders and the consequent waste of floor space. The hydraulic pumping equipment, including pumps, relief and control valves, oil reservoir and pressure gauge are mounted directly above the main cylinder, out of the reach of possible damage from floor conveyances.

The material cylinders on the standard Beatty Hydraulic Extruding Press are 50 inches long. Machine is also arranged for 72 inch long material cylinder. This length provides space for three 16 inch slugs. The rapid return and advance to the material decreases loading time to a minimum.

## FINISHING THE *JOB* BEHIND THE LINES



**CHICAGO MOUNTED WHEELS**

Made of V/T Super Bond, they have real stamina, give unmatched performance and last 150% to 300% longer than ordinary wheels.

Chicago Wheels were the first small wheels mounted on steel shanks. Today there are over 200 different shapes to serve you—made in a variety of abrasives, grains and grades, mounted on shanks of various lengths and diameters of 1/4", 3/32", 1/8" and 3/16".

#### TRY ONE ABSOLUTELY FREE

Tell us the kind of job, size and wheel speed you use, and we'll send you a test wheel postpaid.



**HI-POWER GRINDER**

A real production grinder that is saving many man hours. Weighs 3 lbs. yet is so well balanced that fatigue is practically eliminated. Has enough power to drive a 2 1/2" diam. wheel. Speed 17,000 r.p.m. In case with 3 Chicago Mounted Wheels, Drum Sander and Bands, extra Collets, Wrenches, Dressing Stone, \$38.50.

### BRAND NEW CATALOG

Just off the press, this book is prepared in the modern manner—loads of illustrations, concise descriptions of the complete line of Chicago Mounted Wheels. Send for copy.

### CHICAGO WHEEL & MFG. CO.

Makers of Quality Products for 40 Years  
118 S. Aberdeen St., Chicago, Ill.

When writing Chicago Wheel & Mfg. Co. please mention Purchasing

**ALL-POSITION A-C ELECTRODE**

■ An all-position, high-quality alternating-current electrode, extending the advantages and convenience of high-quality a-c welding to both vertical and overhead positions, has been announced by the General Electric Company.

Alternating-current arc welding has already demonstrated its advantages for work in the horizontal and flat positions. The W-26, developed after intensive research, fulfills a long-felt need for a vertical and overhead a-c welding electrode that would give a high-quality job

from the standpoint of physical characteristics as well as easy operation, adequate penetration, and practically flat fillet contour.

This electrode complies with the requirements of the following specifications: A.W.S. Filler Metal Specification E6011; Navy Bureau of Ships Specification 46F3, Grade 3, Class 1; and the A.S.M.E. Boiler Code, Paragraph U68.

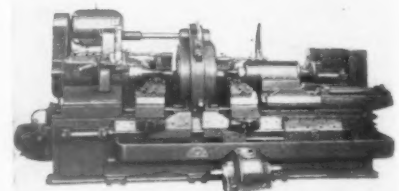
By the use of this electrode, welding shops and fabricators, who have heretofore needed to supplement their a-c welders with stand-by d-c welders for high-quality work in the vertical and

overhead positions, will now be able to release these machines for fabrication work where d-c welding may be essential.

It compares favorably with the highest quality vertical and overhead welding characteristics available from reverse polarity direct-current electrodes. It provides a strong, forceful arc having good fusion, excellent penetration, and uniform characteristics free from arc blow. It is now available in 1/8 in. and 5/32 in. diameters; other sizes from 1/16 in. to 1/4 in. are expected to be available shortly.

Welds made with this electrode of the 5/32 in. diameter show the following average physical properties, the data being obtained from all-weld-metal test specimens in the "as welded" condition. Ultimate tensile

strength .....	72,000 lb. per sq. in.
Yield point .....	60,000 lb. per sq. in.
Elongation in 2 inches	26 per cent
Reduction of area...	46 per cent

**HYDRAULIC TURNING MACHINE**

■ A production increase of 65% is achieved by this heavy-duty, double-end hydraulic machine, built by Snyder Tool and Engineering Co., Detroit, Mich.

The original operation contemplated one heavy and one light cut but actual conditions necessitate two heavy cuts and the removal of up to 6 times the amount of stock originally contemplated. In spite of this, however, and in spite of the fact that both front and rear tool blocks are manually adjusted between the first and second cuts, production is 65% more than estimated.

A feature of this machine is the hydraulic feed operated from a single hydraulic power unit in the rear of the machine. This unit furnishes power to both front and rear tool slides as well as to the tailstock. The movement of the tailstock is controlled by a hand operated valve and facilitates loading and unloading of the piece by pushing the piece forward into the center drive fixture.

The right hand tool bracket, when swung into clearance position, provides a loading platform in line with the locating surface in the center drive.

When the part is loaded and pushed into place between centers, it is clamped manually and the tailstock locked in place, ready for the first of the two turning operations.

A further function of the hydraulic system is the actuating of the front and

# Prompt Deliveries

## ON CASTINGS

### —LARGE AND SMALL . . . .



● A large drill press arm cast for a prominent machinery manufacturer.



● A small pressure casting designed for a gas engine.

**L**EADING manufacturers in many different fields of industry have used Forest City Castings continuously for years—many as long as 25 years.

Forest City production handles castings from a 1/2 ounce to a half ton—gray iron, semi-steel and high-test semi-steel. Today we can produce and deliver with unusual promptness. Discuss your requirements with one of our casting specialists. He's as near as your telephone.

Gray Iron,  
Semi-Steel  
and High Test  
Semi-Steel  
Castings

**PHONE PROSPECT 5040**

**THE FOREST CITY FOUNDRIES CO.**

2500 WEST 27th ST. • CLEVELAND, OHIO

*When writing The Forest City Foundries Co. please mention Purchasing*

rear tool slides. A single cylinder is used to cam the two front slides into position, at which point the cams stop moving and the tool slides are traveled through their work cycle.

Each front tool slide has its own hydraulic cylinder and the slides are racked together to permit a single hydraulic and electrical control. Likewise, the rear tool slides are kept synchronized by a pair of hydraulically actuated cam plates which move the slides through a rapid advance and feed cycle.

The control for the entire machine consists of a start and stop push button, a cycle start push button and an emergency return, these being mounted on the center drive, right in front of the operator. The machine is equipped throughout with anti-friction bearings, the headstock, which uses a twin-plate friction clutch between the motor drive and the spindle, being equipped with an oil pump for pressure lubricating. The center drive is carried on a pair of extra large Timken bearings and is equipped with an oil reservoir from which the oil is carried to the bearings and gears by means of the main gear in the drive.

The base of the machine is welded steel construction, well ribbed for rigidity and the machine itself is constructed with very heavy cross sections in all vital parts, this heavy construction being a definite factor in its successful operation.

The base functions as a large chip trough and coolant container, the chips being removed from the rear of the machine. The coolant is circulated to the cutting tools by a motorized pump at the rear of the machine. Fine chips in the coolant are removed by thorough screening and by passing the liquid over a series of baffles to precipitate fragments.

### INDOOR CURRENT TRANSFORMER



■ The new standard type "CT" indoor current transformer with Hipersil core are announced by the transformer division of the Westinghouse Electric and Manufacturing Company.

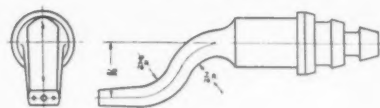
These transformers have a current rating of from 10 to 800 amperes primary and 5 amperes secondary; voltage ratings are 5, 8.7, and 15 kv.

Definite primary terminal dimensions are set for the distance between centers of the outside terminal holes, the size of the hole, the size of the slot, the distance from the base to the under side of the terminal and the overall height from the mounting base to the top of the transformer. Consequently, any standard

type "CT" transformer is interchangeable with any other in its voltage class, regardless of current rating.

These new indoor current transformers meet all the standards adopted by the E.E.I., A.E.I.C., and N.E.M.A. in 1914.

### FLAME CUTTING TIPS



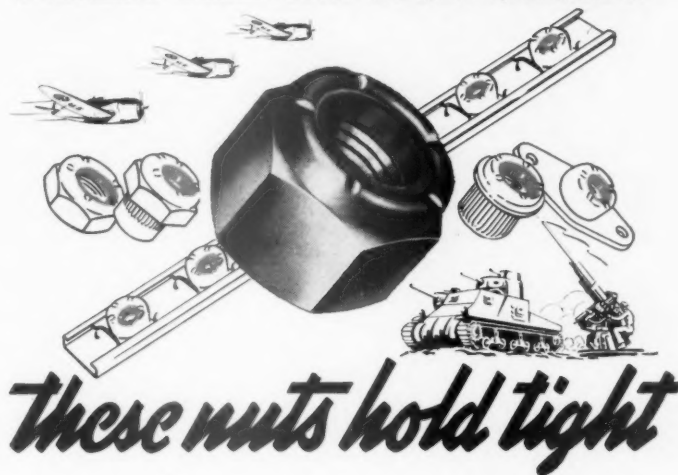
■ Two additions to their line of oxy-acetylene flame cutting tips have been

announced by Air Reduction, New York City. The first, known as style 108, is ideal for working in close quarters. It is bent in an offset shape, to permit cutting along a line 21/32-inch from the vertical centerline of the torch head or barrel. This offset design meets the problem of cutting close to bulkheads, flanges or shoulders where the radius of the torch head would prevent alignment of the cutting orifice vertically over the desired line of cut.

The style 108 tip has milled flat sides, with two preheat flames, and is suitable for either machine cutting or hand cutting operations. It is available at present in sizes Nos. 1 to 3, for cutting steel up

(Continued on page 136)

## WHEN THE BIG TEST COMES



Bolted connections on military airplanes call for lock nuts that hold with a grip which is positive and yet resilient... a grip that withstands the complex vibrations, the stresses, and the shocks, of high-speed maneuvering... a grip that protects the ships and the men who fly in them.

Evidence that Elastic Stop Nuts meet these all-important requirements is found in the fact that they are used for vital structural and equipment fastenings on **every** military airplane built in the Western Hemisphere.

There are more Elastic Stop Nuts on American airplanes, tanks, and other war equipment, than all other lock nuts combined.

WITH THE **RED** LOCKING COLLAR... SYMBOL OF SECURITY

**E**LASTIC STOP NUTS may be the solution to your fastening problems. Sample nuts, for testing, will be furnished without cost or obligation.

» Write for folder explaining the Elastic Stop self-locking principle.

ELASTIC STOP NUT CORPORATION • 2337 VAUXHALL ROAD • UNION, N. J.



When writing Elastic Stop Nut Corporation please mention Purchasing



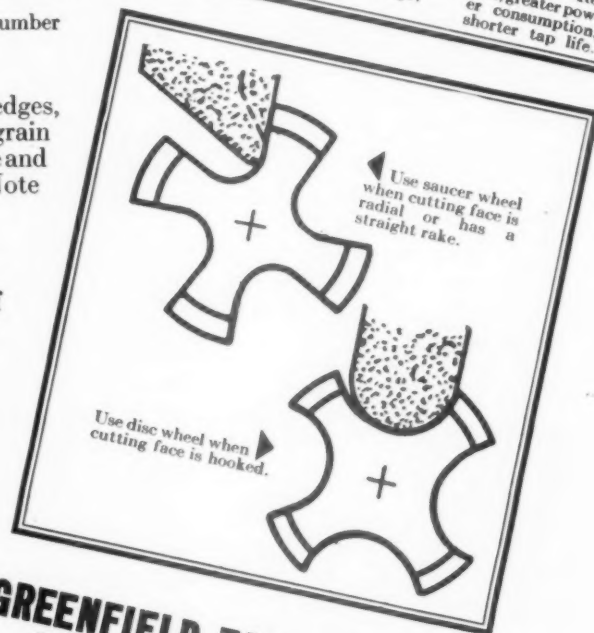
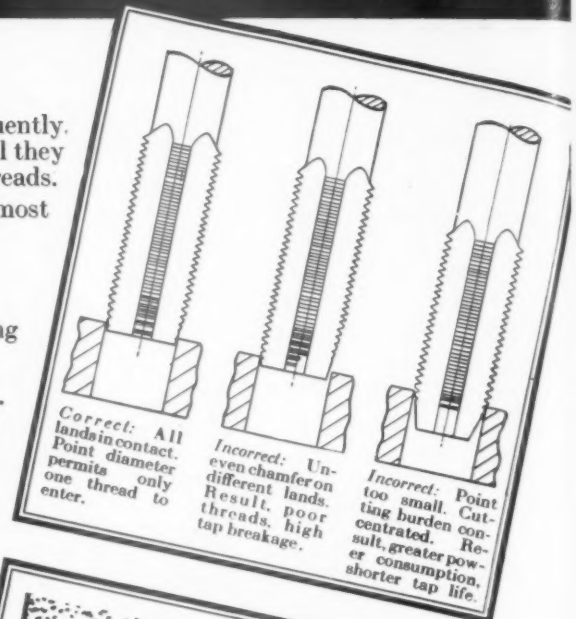
# Give your Taps a "BREAK" or they will **BREAK**

**K**EEP them in good condition by sharpening them frequently. Use dulls them as it does all cutting tools and when dull they are likely to chip, break and produce rough or oversize threads.

Here are some suggestions which will help you get utmost service from your taps:

1. The minute a tap begins to get dull, sharpen it.
2. Take light grinding cuts to avoid "burning" the cutting edges.
3. Use a tap chamfer grinding machine, if possible, as it reproduces the original grind accurately. There are several good ones on the market. If you must grind by hand, note the following:
  - a. As a rule, grind the chamfered portion only. (Note the diagrams which show correct results of grinding and—exaggerated—two common errors.)
  - b. Have a new tap handy for comparison regarding number of threads chamfered.
  - c. Use a soft 80 grain wheel.
4. If tap needs grinding in flute, to touch up the edges, use a universal grinding machine and a hard 60 grain wheel. Use a saucer wheel for a radial or straight rake and a disc wheel formed to the hook for a hooked rake. (Note the sketches which show how to handle this job.)
5. Completely grind away any broken teeth.
6. Polish the ground portion after sharpening if you are tapping soft or stringy materials that have a tendency to "load" the tap.
7. Taper Pipe Taps should always be machine ground and mechanically indexed to eliminate tapping out-of-round holes.

Remember that all taps become dull when in constant use. It takes more power to drive them and they often slow down the tapping machine resulting in lower production and excessive tap wear. *Keep your taps sharp.*



**GREENFIELD TAP AND DIE CORPORATION**  
**GREENFIELD • MASSACHUSETTS**  
 DETROIT PLANT: 5850 SECOND BOULEVARD  
 WAREHOUSES in New York, Chicago and Los Angeles  
 In Canada:  
 GREENFIELD TAP AND DIE CORP. OF CANADA, LTD., GALT, ONT.

**GTD GREENFIELD**  
 TAPS • DIES • GAGES • TWIST DRILLS • REAMERS • SCREW PLATES • PIPE TOOLS

*This is one of a series of advertisements published by the Greenfield Tap and Die Corporation to help users get greater production from their taps. The entire series is now available in booklet form. Send for a copy.*

When writing Greenfield Tap and Die Corporation please mention Purchasing



# *Business* MACHINES *and Stationery* STORES

## MAINTENANCE SUPPLIES FOR OFFICE EQUIPMENT

Take good care of those typewriters and other office machines! You'll have to live with them and work with them for the duration.

By E. L. CADY

**P**RESENT office equipment must be made to last. Typewriters, adding machines, mailing machines and the like are on priorities. Factories which made stapling machines and punches are turning out airplane parts; makers of wooden chairs are concentrating on gliders. New equipment is not coming on to the market in large quantities, and may not do so for some time to come.

Furthermore, present equipment must do more and better work. All of this calls for keeping equipment up to its present efficiency, and improving its performance if possible. And in most instances, a good maintenance program can preserve and improve equipment at surprisingly little cost.

**Services.** Most servicing of such major equipment as typewriters—in large cities at least—is performed on monthly or annual contract basis by companies which make a business of it. And the ideal maintenance program includes the procurement of such services.

Care must be taken that the service house still has skilled personnel. There has been rapid absorption of mechanics having such skills—the army, navy and other military agencies taking all the men they can get, and the high wages of war contract machine shops attracting many others. Servicing of office equipment takes good judgment with special training. A bungled servicing can be far more damaging than no servicing at all.

With skilled men available, service contracts ought to go farther and cost more than most of them do. Every typewriter which is more than three years old, for example, should be taken to the

plant of the service house for a thorough "bench job" overhauling. This seldom requires keeping the machine out of the office more than two days, and the service house usually has spare machines which can be borrowed while the office machine is in the shop. Usually only one typewriter at a time is taken out for such servicing, but they may be removed in groups of two or more from an office which has more than fifty in use or which prefers to make a quick job of the servicing and get it over with.

Removal for bench servicing has not been a feature of past contracts, because the philosophy has been that when a machine was ready for overhaul it was ready for replacement. But such replacement seldom is possible now.

Obviously, the house which removes machines for servicing may need to be one of higher responsibility than one which merely sends men to service machines right in the office, for men working in the office can be watched by the office manager, their degrees of skill estimated and their actions stopped if incorrect, but men performing a bench overhaul will work only as the management of the service house directs.

The intervals at which machines should be sent out for repeated bench overhauls, will depend upon the age and condition of the typewriters, how much they are used, and what kinds of servicing they receive in the office. Under present circumstances the office servicing

ought to be more painstaking than ever before—which usually means signing a different type of service contract than the one which was most economical in 1941.

**The Office Plan.** Not all equipment is subject to attention by the service houses. And major equipment may need maintenance by the office personnel in addition to the work done by the service experts. Every office therefore needs a maintenance plan which both supplements and complements the service house contract.

**Procuring The Instructions.** Every machine should be serviced in accordance with the instructions of its makers. If the original instruction tags or booklets are not found in the files—or if directions are not lithographed or permanently attached as metal labels on the machines—copies may be procured by writing the makers of the machines, mentioning serial numbers and brand names, etc., when writing.

Some of the larger makers of lubricants also have special printed data for office equipment.

**Lubrication and Cleaning.** The bogey feared by all designers of office machinery, is the dousing of too much oil into and onto every bearing by the users of the machines. There is a general human philosophy that if a little oil is good a lot of oil must be better. The use of too much oil causes machines to gather dust and dirt, stains papers and clothing, ruins rubber parts and does other damage. And because excess oil so often is spread over internal parts, lubrication and cleaning—or rather clean-



## ...THE *Right* PAPER is important, too

Choose wisely the paper which you assign to important record keeping, accounting, clerical and correspondence work. Representing perhaps the smallest item in terms of total cost, good paper plays a major part in the efficient production and use of business records. Conversely poor paper — or paper not suited for the purpose — can take a heavy toll in lost time, wasted energy, needless irritation and even costly mistakes.

Since 1863, the Byron Weston Com-

pany has specialized in high grade cotton fibre content papers — the only kind of paper to which you should assign important work of record keeping and communication. The *Weston* line includes papers for permanent records; for accounting, office and factory forms; for machine book-keeping and card record systems; and for letterheads, documents and notices. Your printer or paper supplier will gladly help you select the right *Weston* paper for each specific job.

**PAPER BUYERS:** Keep in touch with the latest news and information about paper, briefly digested in *Weston's Papers*, a publication for paper buyers. To receive a copy, write Department H

**BYRON WESTON COMPANY, Dalton, Massachusetts**

IF IT'S WORTH KEEPING, KEEP IT ON A

# WESTON *paper*

### LEDGERS

BYRON WESTON CO. LINEN RECORD  
(Extra No. 1, 100% New White Cotton and Linen Clippings)  
DEFIANCE LEDGER (100% Cotton Fibre Content)  
WAVERLY LEDGER (75%) CENTENNIAL LEDGER (75%)  
WINCHESTER LEDGER (50%) BLACKSTONE LEDGER (25%)

### INDEXES

DEFIANCE INDEX (100%) WINCHESTER INDEX (50%)  
WESTON'S MACHINE POSTING INDEX (50%)

### MACHINE ACCOUNTING

TYPACOUNT LEDGER (75%)  
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### BONDS

WESTON'S BOND (Extra No. 1, 100%)  
DEFIANCE BOND (100%)  
HOLMESDALE BOND (75%)  
WINCHESTER BOND (50%)  
BLACKSTONE BOND (25%)

ing and lubrication—usually are two operations.

Controlling the amount of oil applied is not always easy. Instruction books and tags commonly use such expressions as "apply one or two drops of oil." But how big is a drop of oil?

Drops of the same oil can be of many sizes—the drop which comes directly from the spout of a can being much larger than the one which falls from the tip of a needle pointed applicator. The office manager of fine machinery making company, coined three expressions which, although neither scientific nor sound engineering, aptly classify oil drops. They are:

Pin Point Size.

Needle's Eye Size.

Apple Seed Size.

His instructions regarding any bearing or part to be oiled, tell how many drops of oil to use, and of what size.

**Cleaning Before Oiling.** For cleaning away accumulations of dirt and dust mixed with excess oil, or of varnish or other materials which may have flaked into the machine interiors and united with the oil to form gum, etc., a good solvent may be used. Solvent may be needed, for if there is any gum or clogging it cannot have come from the oil, since good brands of oil for office machinery never "dry out into gums."

The solvent should not be explosive nor inflammable. But if by personal preference or habit a product such as benzine is used, it should be kept in a special safety can.

Any solvent at all should be kept in a can painted a different color or otherwise different in appearance from the oil can, and if possible different in shape also. The hazard of using solvent when oil was intended, should be minimized.

On rapidly moving equipment, such as electric fans or electrically driven calculating machines, never use solvent anywhere where it cannot be wiped away. Never let solvent penetrate where it will be out of control. It is better to slowly soften the gummy deposits with oil than to ruin bearings.

A portable electric blower—if one can be bought anywhere or can be borrowed from the plant maintenance crew—is the best means for cleaning out the interiors of typewriters and the like. The machine being cleaned should be rested on a sheet of newspaper, or the place to which the oil laden dirt is blown should be restricted in some other way.

Cleaning needs a set of brushes, of various stiffnesses of bristles and lengths and shapes of handles.

Round-pointed hardwood tooth picks also are handy—but care must be taken not to wedge and break off their points in machine parts. In general, cleaning tools should not be of the kinds which can scratch, mar, nor pry parts out of place. When it takes hard steel and pressure to loosen dirt, solvent or oil should be used for softening.

Rags for cleaning should be carefully selected, soft, absorbent, free of lint and ravelings. A thread caught in the interior of a typewriter may take hours to remove.

Rags also should be used to protect the

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# THOUGHTFUL PLANNING IS A SERVICE TO THE NATION

★  
*Printed Advertising  
does a wartime job!*



**BUY  
MORE  
WAR  
BONDS**



GOOD ADVICE for business houses that can't afford to lose good will: Keep trade connections informed with printing, and in the end your trade will keep you!

Layout man and printer by getting together in advance can get unusual and effective printing using standard paper sizes, standard colors and standard weights.

You can get what you want. There is plenty of paper for direct mail advertising. Plan first... Save time—DO IT NOW!

For more than 10 years we have  
advised buyers of printing to

*"Consult Your Printer"*

**INTERNATIONAL  
PAPER COMPANY**  
220 EAST 42nd ST., NEW YORK, N. Y. • BOSTON • CHICAGO • CLEVELAND  
**PAPERS for PRINTING and CONVERTING**

*When writing International Paper Company please mention Purchasing*

## COLUMBIA nonstick PENCIL CARBON PAPERS

A BIG TIME-SAVER  
IN BUSY BUSINESSES AND INDUSTRIES

Gives Sharp, Pencil-Written Copies —  
Single or Multiple — of Diagrams,  
Sketches, etc.

A new high in producing  
bright, clean, colorful

CARBON COPIES  
—IN QUANTITY

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SMEAR, SMUDGE  
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227 East Michigan Street, Milwaukee, Wis.  
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1508 Fox Building, Philadelphia, Penna.  
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## PURCHASING PREVIEWS

is a monthly letter of comment direct from the Nation's Capital, prepared through the facilities of our Washington office and specially keyed to the interests of the purchasing executive. Government policies are entering a new phase, involving significant changes for the buyer.

### TURN TO PAGE 45

and keep in touch with month-to-month developments that will affect industry's purchasing program and procedure.

## "BRITENESS" MANIFOLD

—Surface-Sized—Stiff, Lies Flat—

Substance  
7#, 8#, 9#, 10#

Sold by Leading  
Paper Merchants

White and  
Six Colors

Write for Samples and Prices

**NORTH AMERICAN PULP & PAPER CORPORATION**

200 Madison Avenue, New York City, N. Y.

Mill: Cheboygan, Michigan

platen of a typewriter when cleaning the type and oiling the machine.

A safety oily waste can should be available for the storage and disposal of oil soaked rags. And special care must be taken not to drop these rags into waste baskets—they can start spontaneous combustion fires in the warehouses of waste paper jobbers.

**Do Not Oil.** One of the first things for the maintenance personnel to learn, is what to avoid oiling. Never oil an "oil-less" bearing. These can be identified by the fact that they are made of wood, of plastics, or of some substance other than metal, or that no provisions have been made for feeding oil to them. Do not oil ball or roller bearings unless special devices are in place for doing so—leave these highly accurate parts for the service contractor.

**Types of Oiling Devices.** Pressure grease lubrication fittings are rare on office machines. If any are found, they must be serviced with pressure grease guns, but be sure to feed the right consistency of grease and only the right quantity of it.

Oil cans of good qualities and handy types are inexpensive, few of them are needed in any office, and they quickly pay for themselves in time saved and in better work.

Applicators—long thin rods down which drops of oil can be run to the "hard to get at" places—often are parts of oil can safety caps. If not, a good applicator can be made by straightening out a paper clip. The thinner the applicator, the smaller the drop of oil which it will deliver—a point which is very important. Several sizes of applicators should be on hand, and some of them may be curved or bent for convenience.

Oil cups are inexpensive, and any defective ones should be replaced if replacements can be found. Replacing them usually involves pulling the old one out with a pair of pliers and tapping the new one in gently with a light hammer.

**Lift Cap Oil Cups.** Clean the oil soaked dirt from around the cap—dirt which is not near a bearing will not get into it. Lift the cap with the fingers or with the end of an applicator. Do not fill the cup to the top. Turn over the shaft in the bearing. Do not refill the cup, even if all the oil goes out of it when the shaft moves.

**Ball Top Oil Cups.** Clean first, and do not rub the dirt down into the bearing nor where the oil will wash it down. Press down the ball with an applicator. Put in no more than two or three drops of oil. Revolve the shaft. Wipe away any excess oil around the cup—with this type a drop of oil or so may be spilled.

**Open Oil Hole.** Clean around the hole first, pushing from the edge of the hole outward and not wiping directly across the hole. With a hardwood tooth pick or some other non-marring but hard object, carefully clean out the hole. Do not fill full, nor keep flooding oil into a hole which seems to "drink it," unless you know that the oil is going where it is desired and nowhere else. Wipe away the spilled oil.

**Wick Oilers.** These are found on some electric fan and other motors; they

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often look like pieces of tubing with closed ends extending downward from the bearings. Wipe away the dirt. Unscrew the oiler. Examine the end of the wick which bears against the shaft—use a small magnifying glass for this. If the end is glazed, cut away about  $1/32''$  and pull the wick out an equal distance so it still will bear against the shaft. Fill the cup not more than  $2/3$  full. Replace.

**Individual Devices.** Put one small drop of oil per month on the working parts of pencil sharpeners, stapling machines, punches, pliers, and the like.

**Casters.** One small drop per month. Keep off from rubber or wood parts, and from treads which run on wooden or linoleum floors.

**Motors.** Oil only where there are provisions for oil. Wipe the outside of the casing clean—this is needed for cooling.

**Fans.** Treat like motors. If the front bearing keeps drying out, put in oil, then put a sliver of light grease in oil cup, then another drop of oil over the grease—and no more.

**Adding Machines, etc.** Follow instruction books carefully. If no instructions are available, oil only where there are oil cups or definite provisions for oil.

**Typewriters.** Use applicators carefully. Oil all working parts, but only with tiny drops of oil.

**Personnel.** It is better to have the office maintenance program under the care of some one person than to trust every employee to care for his own machine. The person in charge should be methodical, deft and imaginative.

**Equipment Needed.** Portable work bench or kit box with compartments. Flash lamp or adjustable work light which may be plugged in wherever needed—the light should have a shield or shrouding reflector to direct the glare where needed and protect the worker's eyes. Magnifying glass. Dental type mirror for looking inside of typewriters, etc.

Can of good oil—so little is used that there is no point in having the second best. Oil can with applicator. Can of solvent, different in color and shape from oil can.

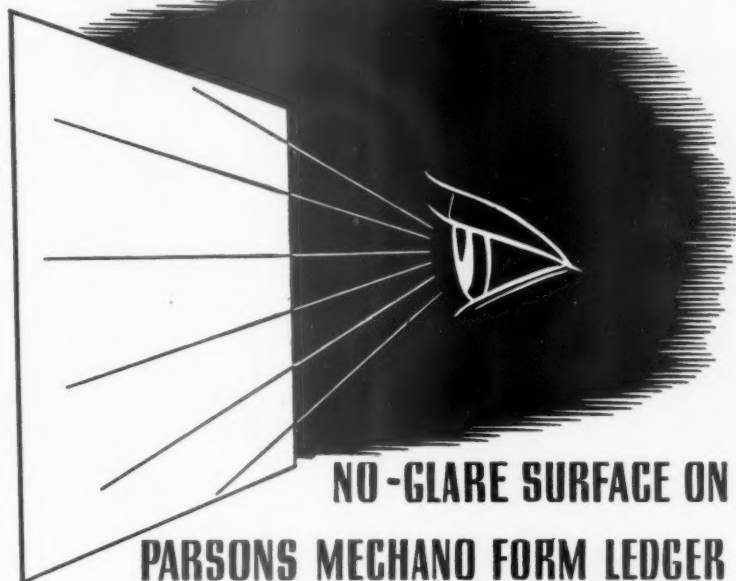
Portable electric blower if available. Set of brushes. Soft, lint free, non-raveling rags. Oily waste can for disposal of rags. Box of round, sharp pointed, hard wood tooth picks, or other sharp but non-metallic instruments.

The greatest enemy of such a maintenance program is the man who likes to meddle with machinery. Therefore, a lock on the kit box may be advisable.

#### RENOVATING TYPEWRITER ROLLERS

By taking advantage of a new rubber-saving process for renovating typewriter rollers, large business firms and other typewriter users can make an important contribution to the nation-wide rubber conservation campaign now under way, according to technical experts of the Office of Price Administration.

A recently developed process makes old typewriter rollers as good as new.



### NO-GLARE SURFACE ON PARSONS MECHANO FORM LEDGER *SPEEDS UP PRODUCTION*

Glare tires the eyes, slows down bookkeeping operations and otherwise impairs efficiency. Guard against this waste of time and energy by using MECHANO FORM LEDGER—the paper with the no-glare surface that increases work output.

MECHANO FORM (50% cotton fibers) costs no more. Yet it gives you the advantages of no-glare surface, strength for use as machine or manual records, and a wide range of colors that permits color-control of miscellaneous forms. MECHANO FORM is available in a full range of colors, sizes and weights.

Write for the Mechano Form Ledger and Index reference book. It is available through all leading Printers and Lithographers or direct from the mill.

## Parsons

BONDS  
LEDGERS  
INDEX

PAPER COMPANY • HOLYOKE • MASS.



STAR PAPER FASTENER CO., NORWALK, CONN.



Model S101 List Price \$6.00

Purchasing Agents, Here's our offer:

... Write us a letter telling us where to send it, and we will send you one of the latest Model Star machines to try out. There's no obligation and the transaction won't cost you a cent!

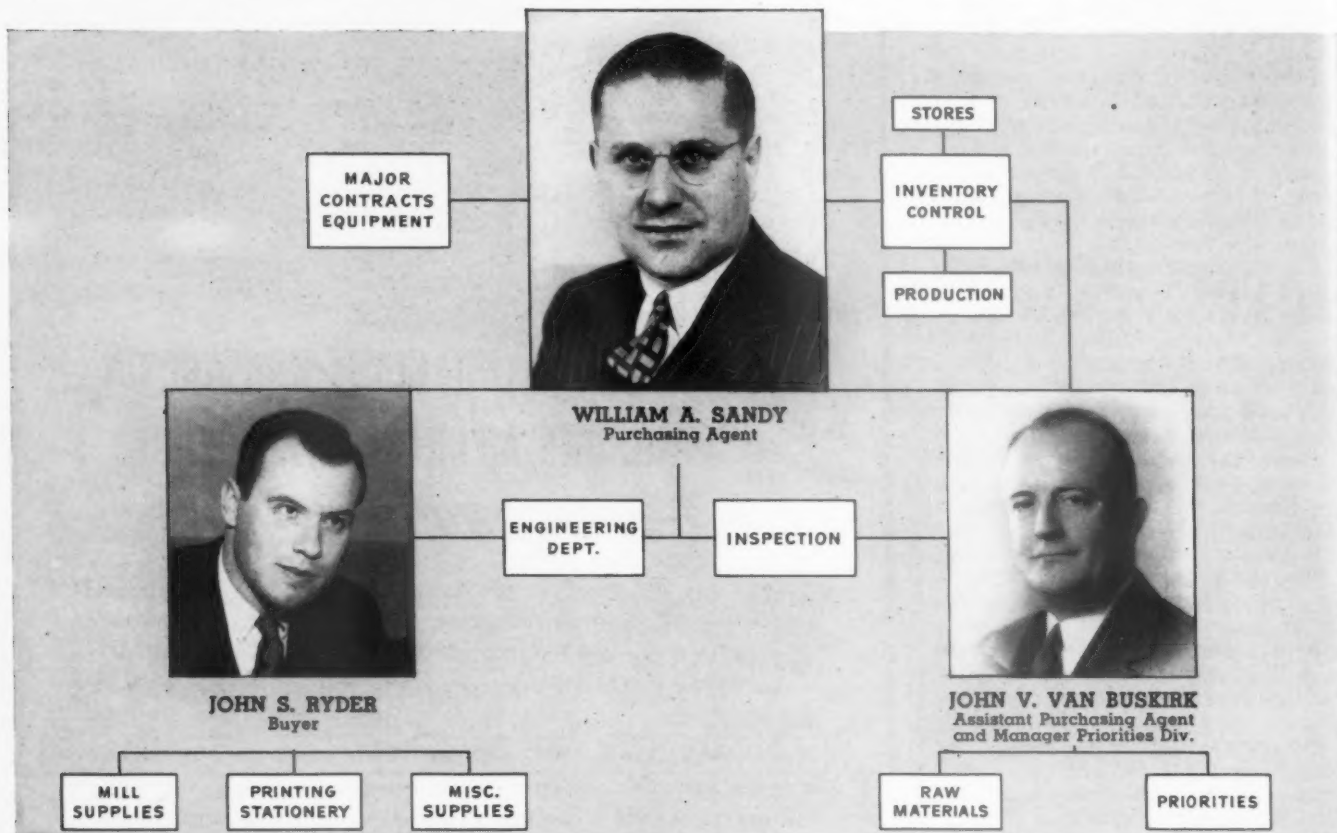
Many other models to choose from.  
Circulars and prices on request.

Dept. P

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## How to Sell Your Products to BELDEN MANUFACTURING COMPANY



### Three executives of Purchasing Department control \$5,000,000 procurements for wire and cable maker.

In the Belden organization plan, *procurement* is a major function centralized in three executives who know products and materials from practical experience in the manufacturing departments. These are the men you must see to introduce your product . . . and the ones who make the final decisions.

#### How Your Product Is Ordered

For consideration of your product, the Belden Purchasing Department requires complete specifications and samples. These are checked with Production . . . then submitted to the Engineering Department for tests. The results determine whether your product goes on the Approved List.

Once your product is on the list, the *last word* in its selection usually comes from these Purchasing Executives. They alone can switch the order *to* or *from* your product, or an equivalent product. When requisitions come through, their choice is made from study of availability, cost, reputation, durability and other product facts that you place in their hands.

#### Cover Such Men Throughout Industry

Like Belden Manufacturing Company, the majority

of large industries today centralize their buying authority in the Purchasing Department. Independent surveys show many instances where over 50% of a company's buying decisions were made solely by purchasing executives.

Your advertising in **PURCHASING** carries your sales story directly to these important factors. As the national magazine of purchasing executives, **PURCHASING** gives *complete, economical, effective* coverage. **PURCHASING**, 205 East 42nd Street, New York City; 333 North Michigan Avenue, Chicago; Leader Building, Cleveland.



A C O N O V E R - M A S T P U B L I C A T I O N

## Liberty String Binders MEET THE EMERGENCY

### HELP CONSERVE RUBBER

by using the most efficient method for packaging and tying all kinds of small forms. Thousands of large banks and business concerns have been using Liberty String Binders for years. Now they are even more vital to the storage of small records than ever before.

Tying with ordinary string is tedious... rubber bands rot, break... and besides they will become increasingly hard to get. Let Liberties do the job.

Checks, Deposit Slips, Vouchers, Sales Slips and any other small forms can be packaged securely and quickly without tying.



### AVAILABLE PLAIN OR PRINTED

Cost less than 2c each in quantities of 250 or more

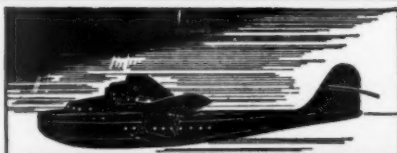
**Free Samples  
ALL STYLES**

Write now for full information about this economical packaging method. Just attach this ad to your letterhead and mail today.



**BANKERS BOX COMPANY**

536 S. CLARK STREET • CHICAGO, ILL.



## THIN PAPERS

### Reduce

TYPING, MAILING  
and FILING COSTS

Specify one of

## ESLEECK

THIN PAPERS

Ideal for Air Mail, Branch  
Office and Foreign  
correspondence.

ESLEECK MANUFACTURING COMPANY

TURNERS FALLS, MASSACHUSETTS

increases their service by several years, and requires the use of no rubber whatever. Typewriter users can help the rubber campaign by employing the new method, which makes it unnecessary to replace old rollers with new rubber, and therefore prevents further inroads upon our wartime rubber supply.

And ordinary sand or grit blasting machine, of the type used by metal polishers, can be shifted to the job of renovating typewriter rollers. Hard films of dirt and dried ink are blasted from the surface of the rollers, leaving the live rubber beneath clean and smooth.

The importance of this discovery is demonstrated by the fact that more than 1,000,000 typewriter rollers must be replaced or renovated every year in this country. Tons of rubber ordinarily consumed by such replacements can be saved by the new process.

There is every reason to believe that the sand blast treatment produces a surface equal to and sometimes better than the ground surfaces of new rollers. The operation can be repeated several times, adding years to the lifespan of the ordinary rollers.

With new and used typewriters rationed only to Government war agencies and to war industries, an estimated 8,000,000 typewriters now in the hands of business or private users must be made to last for the duration. Typewriter production has been severely curtailed, and although repair parts still are being made, replacement of worn typewriter rollers should not be considered unless absolutely necessary.

Instead, typewriter rollers can be taken to almost any concern engaged in sand

## "On Duty" With the Engineers



Photo Courtesy  
Vultee  
Aircraft, Inc.

THE NEW  
**Aceliner**  
STAPLING MACHINE

Large numbers of Ace Stapling Machines and Staples are *on duty* in Government Service and War Industries saving precious minutes of vital time. They are ideally suited to the rigorous tasks to which they are assigned. Aircraft Engineers prefer the Ace method of fastening paper to drafting boards because it permits the free gliding of the T-square. Also, ideal for fastening batches of vital drawings. The tremendous increasing volume of paper work in all branches of war effort emphasizes the importance of Ace Stapling Equipment.

SOLD THROUGH DEALERS EXCLUSIVELY

ACE FASTENER CORP., 3415 N. ASHLAND AVE., CHICAGO, ILL.

# ACE

STAPLING  
MACHINES

The  
**WORLD'S  
FINEST**

FOR EVERY PURSE AND PURPOSE

## L.L. BROWN Bond Paper

MILLS AT ADAMS, MASS.

ESTABLISHED 1849

ADVANCE BOND\*

100% New White Linen & Cotton Fibres

L. L. BROWN'S LINEN\*

100% New White Linen & Cotton Fibres

FORWARD BOND

100% New Cotton Fibres

GREYLOCK BOND

75% New Cotton Fibres

ESCORT BOND

50% New Cotton Fibres



\*Permanent  
grades

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blasting operations, because several types of machines now in use are capable of renovating the rollers. The process is far superior to the ordinary regrinding operation, which reduces the thickness of the roller to a much greater degree.

The sand or grit blasting operation is briefly as follows: The roller is rotated in a blast of No. 90 steel grit at a distance of from 1 to 2 inches from the nozzle, under an air pressure of 15 to 20 pounds for two or three minutes. The operation does not remove deep pits or corrugations, but rollers that are not too deeply pitted or corrugated will work satisfactorily after the glazed surface has been removed. The process was developed by the Bell Telephone Laboratories. Further details may be obtained from the Standards Section Consumer Division, Office of Price Administration.

#### MAINTENANCE HINTS FOR INDUSTRIAL LIGHTING

Better performance and greater efficiency at lower operating costs are the direct benefits of a complete inspection and well-organized maintenance program for industrial fluorescent and incandescent lighting. In addition, critical materials such as aluminum, copper, bronze, and nickel are conserved and the normal life of the fixtures are substantially increased.

Luminaires should be cleaned frequently. If dirt is allowed to accumulate on reflecting surfaces and lamps, illumination may be reduced 30 to 50% in a

short time. For maximum efficiency, reflectors must be thoroughly cleaned with soap and water. When concentrating high bay reflectors are used, dirt not only reduces total light output but also alters the light distribution. For example, the efficiency of an aluminum high bay reflector was reduced 42% by dirt, and the candlepower was reduced 66% because the distribution was changed. Therefore, illumination on the working plane was reduced about 49 per cent.

When lamps fail they should be replaced immediately with the proper size and type. In large plants, the most effective method is to have a relamping crew patrol the plant regularly. With a properly planned system, the lost lumen hours and the cost of relamping are kept to a minimum. When fluorescent units are used, the lamp fails when the emission on the electrodes is used up. At this point the lamp will flash on and off and must be replaced promptly to protect the starter and ballast.

For most efficient lighting with filament lamps the luminaires should operate at rated voltage marked on the bulb. Socket voltage below the rated value will reduce light output in the ratio of about three per cent for every one per cent in reduced voltage. A high voltage will increase light output and lumens per watt, but will adversely affect the life.

The voltage rating of a fluorescent luminaire is marked on the luminaire name plate and ballast, and should be

kept at the center of the specified range. Both high and low voltages reduce fluorescent lamp life and many cause starting difficulties and arc instability. Therefore, it is important to make periodic voltage checks to insure continued maximum lamp operating efficiency.

Blackened and over age lamps waste current and lower the light output. Worn or frayed wiring can cause circuit failures. Therefore, regular cleaning and wire inspection schedules should be planned, and lamps that have passed their normal rated life should be replaced. Poor connections, faulty safety devices, and mounting fixtures should be regularly inspected. Dirty reflectors, lenses, and lamps may be cleaned easily with non-abrasive soap.

1 1 1

Wallace K. Brown has been appointed Vice President in charge of Procurement for the Crocker-Wheeler Electric Mfg. Co., Ampere, N. J., with the responsibility of coordinating and expediting all the related functions of the procurement and purchasing departments. Mr. Brown is a graduate of Clarkson College of Technology and the University of Illinois. He joined the Crocker-Wheeler organization as an apprentice engineer in 1908, became successively district manager at San Francisco and Newark and eastern sales manager at New York. In 1938 he was named Vice President and General Sales Manager for the company.

## WELL EQUIPPED

Every American soldier who "goes over" will be the best equipped fighting man in the world. Good equipment is one of the necessary essentials of the modern army and we are grateful that our boys will use the best.

Way back of the lines, in the drafting rooms of the plants producing war materials, experts have found that it also pays to provide workers with quality equipment. That is why KOH-I-NOOR is so often chosen by men who know pencils best. You too, can gain advantage in the use of KOH-I-NOOR Drawing Pencils; 17 degrees of unvarying, smooth, free-working perfection.



21511 KOH-I-NOOR ARTIST PENCIL. Single end, hexagon, yellow polished, gold stamped; stainless steel point of new design and construction, white plastic tip. A fine precision instrument. Made in 17 degrees: 6B to 9H.  
22200 KOH-I-NOOR LEADS. For use with the 21511 Artist Pencil.



Send for Booklet No. 11

**KOH-I-NOOR**  
PENCIL COMPANY INC.  
373 FOURTH AVENUE • NEW YORK

HOLIDAYS ARE SWELL—  
BUT THERE'S SOMETHING  
ABOUT THE FACTORY  
I MISS NO END!



Specify

## VICTORIA TOILET TISSUES

Single Fold, Double Fold, or Black Core—for high quality at low cost. The Victoria Paper Mills Company, Fulton, New York.

Founded  in 1880



# What are "NE" steels?

*Some Questions and Answers on New National Emergency Analyses*

## National Emergency (NE) Steels

are a series of new alloy analyses, developed, at WPB's request, to supplant standard steels of rich strategic alloy content. These new analyses are recommended by WPB as alternates for present nickel, chromium and chrome nickel constructional alloy steels.

## What is the Purpose of NE Steels?

Extensive substitution of NE grades for present standard analyses will "stretch" our supply of critical nickel and chromium. Greater use of manganese and moly will help speed alloy steel production and deliveries. WPB states that "NE steels and certain others containing less, or no strategic elements, will soon be only steels available." You are urged to change as quickly as possible, to be prepared when present standard analyses are cut off.

## What are the NE Analyses?

A list of present standard alloy

"specs" and recommended NE alternates, showing chemical compositions, may be obtained by mailing the coupon below to Peter A. Frasse and Co., Inc.

## How About Physical Properties?

Extensive tests are now being made on NE grades, results of which will be furnished on request. Conclusive data will be published as soon as sufficient tests are accumulated.

## When Will They Be Available?

Test heats have already been melted by most alloy mills. Frasse will stock NE grades as fast as mill rolling schedules permit. Details will be furnished shortly. *Peter A. Frasse and Co., Inc., 17 Grand Street, N. Y. C. (Walker 5-2200) • 3911 Wissabickon Avenue, Philadelphia (Radcliff 7100 — Park 5541) • 50 Exchange Street, Buffalo (Washington 2000) • Jersey City, Hartford, Rochester, Syracuse, Baltimore.*



## FRASSE *Mechanical* STEELS

SEAMLESS STEEL TUBING  
COLD FINISHED BARS  
ALLOY STEELS • DRILL ROD  
STAINLESS STEELS  
COLD ROLLED STRIP & SHEETS  
WELDED STEEL TUBING

Peter A. Frasse and Co., Inc.  
Grand Street at 6th Avenue, N. Y. C.  
Gentlemen:

Please send me, without obligation, a list of recommended NE steels and their chemical compositions.

Name.....

Firm.....

Address.....

*When writing Peter A. Frasse and Co. Inc. please mention Purchasing*

(Continued from page 125)  
to 1½ inches thick.

The other new addition to the line is the style 139 straight tip with one pre-heat orifice, for certain machine or hand cutting operations. This is a companion tip to the recently announced style 119, which carries two preheat orifices. Made in sizes Nos. 0 to 3, style 139 is particularly adapted to splitting angle iron, straight-line cutting using a straight edge as a guide, or sheet metal cutting operations, in which light preheat is desired.

#### DEGREASING MATERIAL

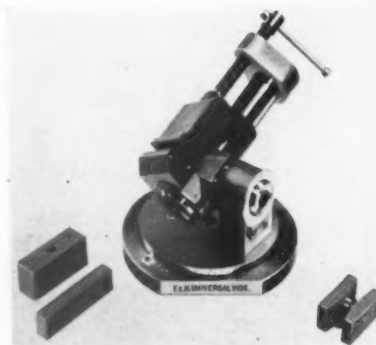
■ Specially designed to meet war demands for faster cycles in anodic degreasing or reverse current cleaning of

cold rolled steel parts before finishing, a newly developed alkaline-type material has just been announced by the Technical Research Laboratories of Oakite Products, Inc., New York. This development is now being successfully used to speed up production of a wide range of war supply items, such as gun mechanisms, control instruments, aircraft forgings and bearings, airplane propeller hubs and engine parts, armor-piercing shells, and tank transmission gear and tread parts.

This material is reported to provide several original, exclusive features which mark it a basic contribution to faster production, more uniform results, low unit cost and long solution life. Due

to its high conductivity, ready adaptability to have water conditions, effective smut-removing properties and fast wetting-out action, the material is said to remove oil, grease, smut, polishing and buffing compounds on the consistently thorough, speedy basis required where a large volume of work is handled and where fast, effective soil removal is essential. The material has been found particularly advantageous to plating departments and contract finishing shops using the Bullard-Dunn Process for the tin coating of steel parts.

#### ANGLE MACHINING PACKAGE



■ An "angle machining package", designed to materially reduce set up time in the production of compound angles, is announced by the F & H Mfg. Co., Detroit, Mich. A package consisting of three parts—the Universal vise, with improved locking control, a grinding wheel angle dressing attachment, and a unique swivel clamp for holding odd shaped work pieces is being made by F & H Mfg. Co., Detroit, Mich. The latter, called "Equi-hold", consists of two friction plates joined together by ball and socket. It fits between the work piece and one jaw of the vise, being fastened to the latter, adapting itself to the angle of the piece. The Universal vise is of all steel construction, precision built, with hardened and ground steel jaws. Extreme precision in producing any angle, vertical, horizontal, or transverse, is said to result from the vernier dials, which are standard equipment. The vise is compact, being only 4¾" high, yet the jaws open to the standard width of 2¼". A weight of 14 pounds makes the vise easily portable.

The third item in the angle machining package is a grinding wheel dressing attachment which fits into the Universal vise, eliminating the need for a separate angle wheel dresser. The dressing tool is rigidly held at the correct "drag" angle for best dressing results.

#### FLASHING METHOD

■ For safe, leakproof repairs to worn-out flashings, a new method has been devised to take the place of lead or copper. Easy to follow. Inexpensive application makes a permanent replacement and adheres tightly to all types of industrial roofs, including corrugated

## MACHINE TOOL BEARINGS

● Bunting Bronze Bearings have always been an indispensable part of machine tool development. Today these bearings serve in countless machine tools that are winning the war on the industrial front.

The precision standards of machine tool operation today demand bearings that support spindles and other moving parts with constant, unvariable accuracy. In this vital function nothing can take the place of the bronze sleeve-type bearing.

Let Bunting's vast experience in this field serve you today in the equipment and maintenance of the machine tools so urgently needed in the all-out war effort. The Bunting Brass & Bronze Company, Toledo, O. Warehouses in All Principal Cities.

#### WINNING THE WAR WITH MACHINE TOOLS

The machine tool is the outstanding factor in the production of war material. The fact that the machine tool industry of America is winning a gigantic battle with the machine tool builders of enemy nations is today the most significant indication of ultimate victory for the United Nations.



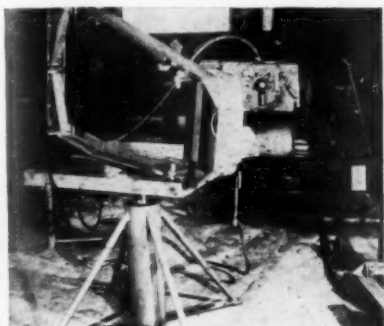
# Bunting

BRONZE BUSHINGS • BEARINGS • PRECISION BRONZE BARS

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### HYDRAULIC ELEVATING WELDING TABLE

iron. Requires no skill—handy man can apply it. Quick brush application can be used over entire roof with equally good results. Materials as well as complete instructions are furnished by Flex-rock Company of Philadelphia, Pa.



■ This table has proven a very handy piece of equipment in welding shops. While it would not exactly be called a welding positioner, it does serve this purpose in many instances as well as more expensive pieces of equipment.

The operator can keep the work at the most convenient welding heights by means of a foot operated hydraulic pump. Work also can be turned to the most convenient position inasmuch as the table will revolve as well as elevate.

The standard stock size of table has a capacity of 2000 lbs., platform size 30" x 30", lowered height 26", elevated height 40", elevation 14". Table is portable although it is mounted on a floor base rather than on casters.

It can also be made in other sizes in addition to this standard size. This is a development of the LYON-Raymond Corporation, Greene, N. Y.

### EXTINGUISHING MAGNESIUM FIRES

■ A product is now being marketed by The S. Obermayer Co., Chicago, Illinois, for use in extinguishing magnesium bombs and fires. Cend-Ex is a granulated coal tar pitch conforming to the standards set by the U. S. Bureau of Mines and recommended as being most effective in dealing with magnesium bombs and fires. It comes packed in 12½ pound rectangular tubes which can be hung on the wall or placed at strategic points in a factory, ready for instant use. The tube is 30 inches long—thus enabling the operator to work well away from the bomb or fire. With each tube of Cend-Ex a placard of complete directions is furnished which shows how to deal with bombs or fires of this type.

### SPECIAL GAGES

■ Several new types of gages are announced by the Federal Products Corporation, 1144 Eddy St., Providence, R. I. The model 167 P-75 is a single-purpose production gage for checking a shallow recess 6.80" diameter. The indi-

cator is set back away from contacts to clear obstructions on the machine. Gage is sensitive and accurate for tolerances in tenths of thousandths. Range 0.025".

The model 247 B-63 gage inspects work for diameter and roundness. It is universal and is readily adapted to inspection of work of various diameters and thicknesses. It can be easily modified to inspect even smaller or larger work than this particular gage is designed for. Capacity min. dia. 6"; max. dia. 12". Min. thickness ¼"; max. 2". Graduated 0.0001"; range 0.010".

The model 294 P-26 is a gage for in-

specting the distance between faces of crankshaft bearings. The sensitive point at the right of the base is mounted on a triangular piece which is supported on flat springs, allowing it to transfer the motion to the indicator without friction or lost motion. The latter can be controlled by the screw and check nut below the indicator point.

### HEKTOWRITER RIBBON

■ So that the operator of the hektowriter machine may thread and rethread the ribbon without smudging or

**If you want SPEED in  
the QUANTITY PRODUCTION  
of SMALL MACHINE PARTS**



**...then sub-  
contract to  
POWDER METALLURGY  
INC.**

Here is a typical example of the time, material, and labor savings that can be effected by purchasing "Pomet" Parts.

One manufacturer needed pole pieces of standard size and shape. Another required special size and shape. Both demanded close tolerances—and both had definite specifications on permeability, residual magnetism, hysteresis, etc.

These pole pieces, previously turned out of a tough machining metal, are now being pressed from metal powder of "Pomet" by Powder Metallurgy Inc.—in quantity, at a high rate of speed, and at a substantially lower cost for these manufacturers.

**...for quotations, send  
your blue-prints  
and specifications  
to**

**★★★ POWDER METALLURGY Inc.**

CONTRACT MANUFACTURERS OF PARTS PRESSED FROM METAL POWDERS . . .  
ALUMINUM, BRASS, BRONZE, IRON, STEEL, AND METAL/NON-METAL COMBINATIONS

42-41 CRESCENT STREET, LONG ISLAND CITY, N. Y.

When writing Powder Metallurgy, Inc. please mention Purchasing

7-PM-2



soiling her hands, Old Town Ribbon and Carbon Co., Brooklyn, N. Y., has perfected its new Hi-Test Perfectwriter ribbon. This ribbon has a "clean strip" at each end. The strip, one yard in length, is clear, clean, un-inked paper (not pasted) enabling the operator to thread the ribbon into the machine without having her fingers touch any part of the inked section. A similar "clean strip" at the other end of the ribbon makes re-threading equally smudge-free.

This feature is a boon to operators who heretofore had their hands soiled threading hoktewriter ribbons into their machines.

## SISAL ROPE

■ American Manufacturing Company, Brooklyn, N. Y., cordage mill, points out that a good sisal rope can be used for almost every purpose in place of manila with complete safety and satisfaction. Even though the Government has earmarked all stocks of manila hemp for the Navy and a few other essential uses, including some industrial uses, it is still necessary to further curtail the use of manila.

American's new sisal product is especially suited to many industrial uses. It is made of pure sisal fibre of the finest

quality. Its strength is 80% of that of first-grade manila rope. It is lubricated with the same No. 1 cordage solution making it just as waterproof as top-quality manila rope. This rope is smooth and uniform and is made in a complete range of sizes.

## INSULATED SKID BOX



■ A special skid box for storing and cooling hot forgings is one of the latest engineering developments of The Union Metal Manufacturing Company, Canton, Ohio.

Designed for a manufacturer who had been burying hot forgings underground for a 48-hour cooling in order to keep them from flaking, the unit has a 7-gauge skid, a 9-gauge outer casing, and a 12-gauge inner casing with a 3/4" asbestos lining in between. The lid is also reinforced and insulated.

This unusual box is filled with hot forgings, picked up by a crane or lift truck, then stored out of the way until the forgings have completely cooled. This method provides better insurance against flaking and the time formerly spent in burying and uncovering forgings is saved.

This skid box can be supplied in sizes to meet individual requirements of the user.

## TEMPERATURE SIGNAL STICKS

■ The Tempil Corp., New York, N. Y., announce a new, convenient stick form of their product.

These sticks have a specified melting point. They are available from 125° F. to 1600° F., in convenient temperature intervals, and have a mean accuracy of within 1% of the temperature clearly stamped on each stick or pellet.

Thus a 300° stick, drawn across a surface heated to less than 300° F., will leave a chalklike mark . . . which melts sharply into a liquid streak when the surface reaches 300° F.

Tempil pellets and the new sticks provide a revolutionary, yet simple and convenient method of signalling desired preheating temperatures in the welding of steel, special alloys, cast iron and non-ferrous metals; in local heating, heat-

## Dig This Book Out of Your Files!



### . . . It Solves Critical Wartime Production Problems

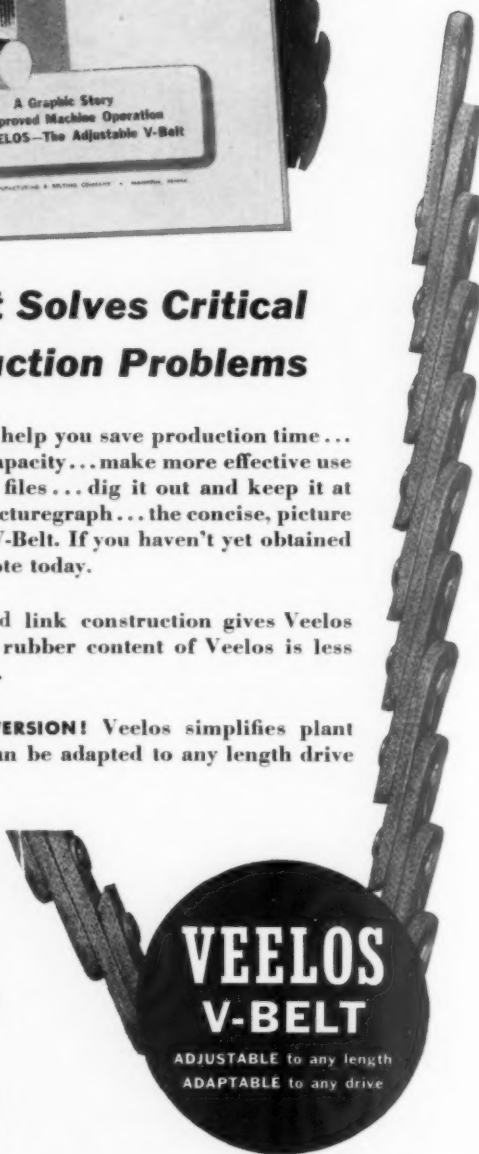
**THIS** one handy reference may help you save production time . . . operate machines at greater capacity . . . make more effective use of power. It's probably in your files . . . dig it out and keep it at your fingertips! It's the Veelos Picturegraph . . . the concise, picture story of Veelos—the adjustable V-Belt. If you haven't yet obtained your free copy, just drop us a note today.

**VEELOS SAVES RUBBER!** Patented link construction gives Veelos greater flexibility although the rubber content of Veelos is less than half that of endless V-Belts.

**VEELOS SPEEDS-UP PLANT CONVERSION!** Veelos simplifies plant layout and machine design . . . can be adapted to any length drive . . . imposes no fixed distances.

**VEELOS PROTECTS BEARINGS!** Link construction makes it easy to maintain correct tension on *each* strand of a multiple Veelos drive. This eliminates a common cause of bearing failure—the practice of adjusting belt tension by increasing distance between motor and machine.

**MANHEIM MANUFACTURING & BELTING CO., MANHEIM, PA.**



*When writing Manheim Manufacturing & Belting Co. please mention Purchasing*

# WeldELLS



## THEY SPEAK HIS LANGUAGE — these precision quarter-marks

Just ask the man who welds them, if you question the importance of these precision quarter-marks that are found only on WeldELLS and other Taylor Forge Welding Fittings.

He'll tell you how much time and trouble these reference points save in figuring center lines, angles and offsets; how much easier they make it to keep

pipings lined up in the proper plane. Fact is, this exclusive feature would be reason enough to insist on WeldELLS even if they didn't have the many other improving features listed opposite.

But quarter-marks are only one extra value of the fittings that have *everything* . . . for the man who specifies, welds, or pays the bill!

## WeldELLS

have *everything*—

No other fittings for pipe welding combine these features which in addition to quarter-markings include:

- ▶ **Seamless**—Greater strength and uniformity.
- ▶ **Tangents**—Keep weld away from zone of highest stress—simplify lining up.
- ▶ **Selective reinforcement**—provides uniform strength.
- ▶ **Permanent and complete identification marking**—saves time and eliminates errors in shop and field.
- ▶ **Wall thickness never less than specification minimum**—assures full strength and long life.
- ▶ **Machine tool beveled ends**—provide best welding surface and accurate bevel and land.
- ▶ **The most complete line of Welding Fittings and Forged Steel Flanges in the World**—insures complete service and undivided responsibility.

TAYLOR FORGE & PIPE WORKS, General Offices & Works: Chicago, P. O. Box 485  
New York Office: 50 Church Street • Philadelphia Office: Broad Street Station Bldg.

*When writing Taylor Forge & Pipe Works please mention Purchasing*

treatment and fabrication of metals generally; in short, for all metal-working operations which require careful and accurate temperature control. They are particularly useful in the black-heat range, where the importance of accurate control is becoming increasingly recognized.

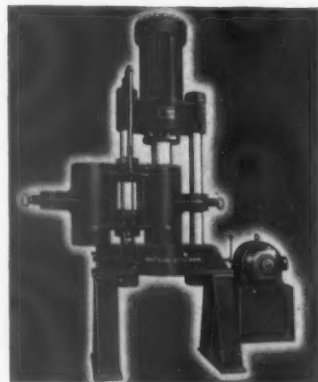
The new product offers a means of leaving a temperature signal mark on less accessible places, such as vertical, inclined and overhead surfaces. Properly used, each stick will yield up to 1000 temperature determinations. They come packed in a handy individual tube that fits the pocket and prevents breakage, and are priced at \$2 each.

### 200-TON STRAINING PRESS

■ A 200-ton-capacity hydraulic straining press, manufactured by the Watson-Stillman Co., Roselle, N. J., strains or filters fluids under a pressure of 2000 lbs. per square inch. The machine has two cylindrical containers, each 10" in diameter and 33" deep, mounted on a swinging arm so that one may be filled while the press strains material from the other.

The press is completely self-contained, including 20-h.p. motor, 18-g.p.m. pump, and oil tank. The entire unit stands 14 feet high, weighs 15,000 lbs. and requires 5 feet by 3 feet of floor space.

Control is by a single, lever-operated valve.



The main ram has a 33-inch stroke and operates in a double-acting cylinder. Two container lifting cylinders facilitate swinging of the containers between loading and straining operations.

This unit was recently delivered to a plant of the National Carbon Company.

# MILFORD

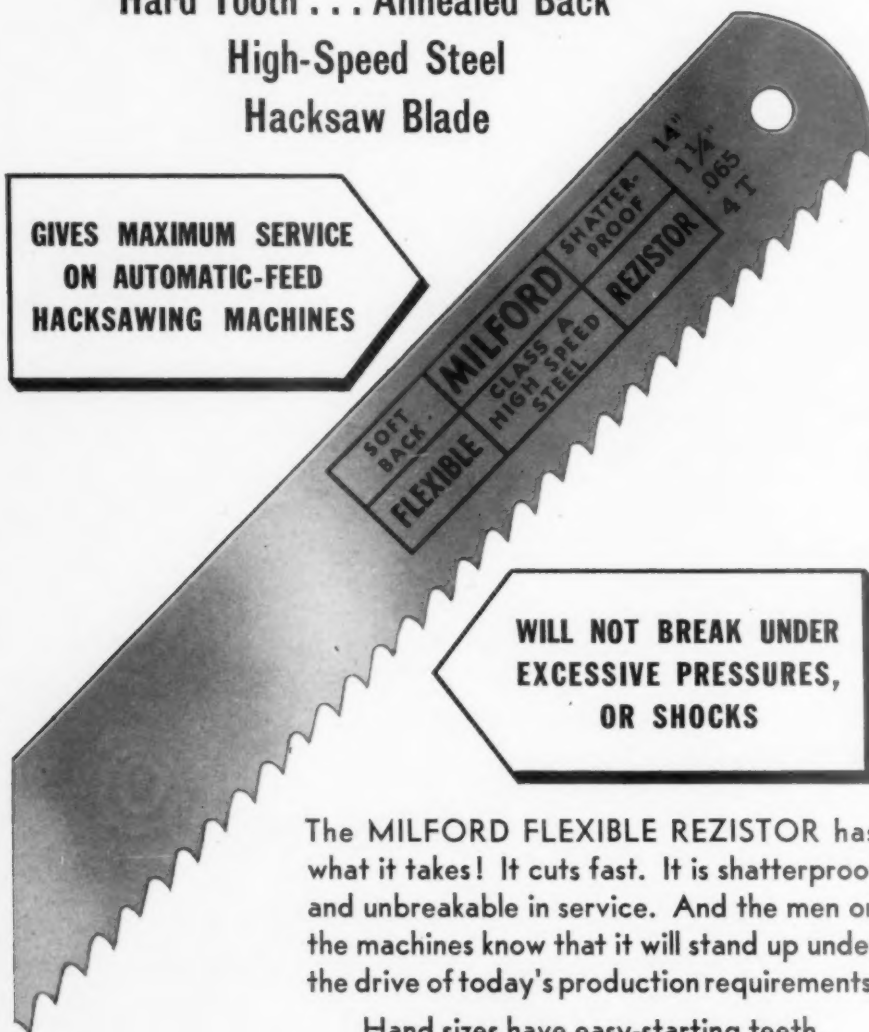
## FLEXIBLE REZISTOR

Hard Tooth . . . Annealed Back

High-Speed Steel

Hacksaw Blade

GIVES MAXIMUM SERVICE  
ON AUTOMATIC-FEED  
HACKSAWING MACHINES



WILL NOT BREAK UNDER  
EXCESSIVE PRESSURES,  
OR SHOCKS

The MILFORD FLEXIBLE REZISTOR has what it takes! It cuts fast. It is shatterproof and unbreakable in service. And the men on the machines know that it will stand up under the drive of today's production requirements.

Hand sizes have easy-starting teeth.

**THE HENRY G. THOMPSON & SON CO.**  
NEW HAVEN, CONN., U.S.A.

• • **Makers of Milford Profile Saw** • •

### DUST RESPIRATOR



■ American Optical Company of Southbridge, Mass., announces a respirator for protection against toxic dusts. Representing an entirely new design in toxic dust respirators, this respiratory protector is light in weight and gives full vision, while the entire face piece is itself a filter and compresses maximum protection area into minimum space.

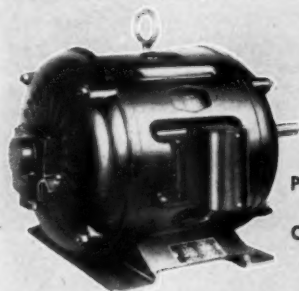
The closely fitted, laboratory-tested filter has been approved by the U. S. Bureau of Mines for protection against the inhalation of toxic or poisonous dusts (dispersoids or particulate matter formed by the disintegration of solid materials by such processes as crushing, grinding and abrading) as lead, cadmium, arsenic, chromium, manganese, selenium, vanadium and their compounds.

The easily adjusted face piece with its leak-sealing cantilever edges of pure, pliable rubber gives face-fitting comfort. The simple, non-reversing exhalation valve gives positive protection. The double headband of solid, sanitary rubber holds the respirator (which weighs only one and a half ounces) in place without noticeable tension — will not force mask-edges into face.

*When writing The Henry G. Thompson & Son Co. please mention Purchasing*



# For MOTORS, TRANSFORMERS, and BRIDGE BRAKES consult **WAGNER**



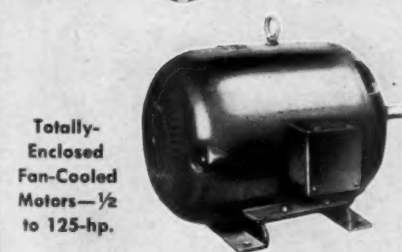
**Polyphase  
Squirrel-  
Cage Motors**  
—1/6 to  
400-hp.



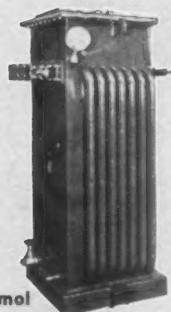
**Explosion-  
Proof Motors**  
—3/4 to  
125-hp.



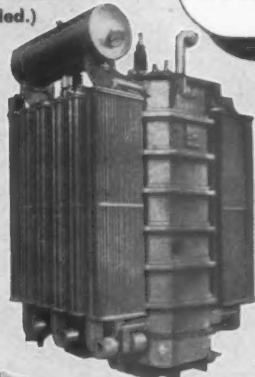
**Multi-  
Speed  
Motors**—  
1/2 to  
125-hp.



**Totally-  
Enclosed  
Fan-Cooled  
Motors**—1/2  
to 125-hp.



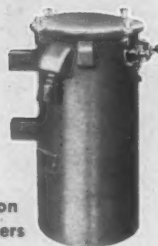
**Noflamol  
Transformer,  
(Non-Inflammable  
Liquid Filled.)**



**Power Transformers**



**Constant-  
Current  
Regulators**



**Distribution  
Transformers**

The Wagner line includes all types of motors and transformers urgently needed by the defense industries. In addition, Wagner makes hydraulic bridge brakes for overhead cranes to help speed up the moving of heavy materials and to assure maximum safety to workers.

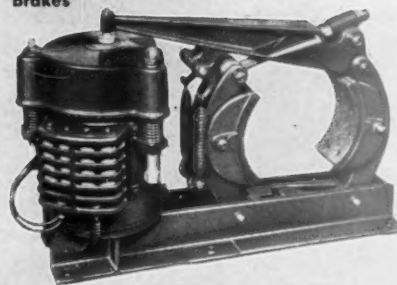
Wagner's large, modern plant is devoted to the production of these items—products that have met the exacting requirements of industry by giving dependable, trouble-free service.

If you are accelerating your production, if you are planning the replacement of motors, transformers and bridge brakes, consult Wagner.

**Type H  
Hydraulic  
Bridge  
Brakes**



**Type HM  
Hydraulic Bridge  
Brakes**



## MOTORS

Wagner motors are built in a wide range of types and sizes with electrical and mechanical characteristics to fit the requirements of all types of motor-driven machinery and equipment. Bulletins MU-182 and MU-183 illustrate and describe the complete line of Wagner motors. Everyone responsible for the purchase and maintenance of motors should have these free bulletins.

## TRANSFORMERS

No matter what the requirement may be, Wagner can furnish the right transformer for the job. The line includes power transformers, distribution transformers, Noflamol transformers and constant-current regulators. Bulletins TU-180 and TU-181 give complete information on the line of Wagner transformers. These bulletins contain information of value to every transformer user.

## HYDRAULIC BRIDGE BRAKES

Today, Wagner bridge brakes are standard equipment on most overhead cranes. They are ideal for new installations as well as conversions from mechanical brakes. Available in type H for inside cranes, and type HM for outside cranes where automatic parking attachment is desirable. You should have bulletin IU-20. It will be sent on request.

**25 SALES AND SERVICE BRANCHES**  
*Ready to Serve You*

Wagner maintains 25 sales and service branches conveniently located throughout the country. Trained sales engineers are always ready to assist you in selecting the exact motor, transformer, or hydraulic bridge brake to suit your requirements.

**Wagner Electric Corporation**  
6400 Plymouth Avenue, Saint Louis, Mo., U.S.A.

Gentlemen:

P E42-2

I would like to have free copies of motor bulletins, MU-182 and MU-183 ☐. Transformer bulletins TU-180 and TU-181 ☐. Hydraulic bridge brake bulletin IU-20 ☐.

Name  Position

Company

City  State

**MOTORS • TRANSFORMERS • BRIDGE BRAKES**

*When writing Wagner Electric Corporation please mention Purchasing*

# PERSONALITIES

## *in the* NEWS

**G. H. Bockius**, Vice President in Charge of Purchasing and member of the Board of Directors of the Diebold Safe & Lock Co., Canton, Ohio, was re-elected to these posts at the annual stockholders' meeting on June 1st.

**Charles Wilson** has been appointed Purchasing Agent for King County,

Washington, succeeding Major William Bloch, Jr., who has entered active service with the Army. Mr. Wilson was formerly Assistant Purchasing Agent.

**Miss Genevieve McQuiggan** has been appointed City Purchasing Agent at Akron, Ohio, following recent competitive civil service tests. Miss McQuiggan

has been a member of the city purchasing department for twenty years, and has served as Acting Purchasing Agent for some time past.

**John R. Morris** has been appointed Purchasing Agent of the General Hospital Association at Paterson, N. J.

**Chester Weidener** has been appointed Assistant Director of Purchasing and Supplies for the Pacific area of the American Red Cross. His headquarters will be at San Francisco.

**Ralph C. Morris**, Purchasing Agent and Assistant Executive Secretary of the Burroughs Newsboys Foundation, Boston, has been named Business Manager of the Foundation and of The Agassiz Village which it operates.

**Hubert Knight** has been appointed Purchasing Agent for the Rheem Mfg. Co. at Houston, Texas, succeeding Earl Beason, who has been transferred to the company's new plant at Birmingham, Alabama. Mr. Knight has been with the company for the past two years as Mr. Beason's assistant.

**C. A. Kirchmaier** has been appointed Purchasing Agent of the recently organized Rochester (N. Y.) Defense Products Corp. He was formerly head of the purchasing department at the Bausch & Lomb Optical Co.

**Fred W. Kirby**, formerly Purchasing Agent of The National Electric Coil Co., Columbus, Ohio, has been named Vice President and General Manager of that organization. Charles Sprowl becomes Purchasing Agent of the company.

**Frank Chesney**, Purchasing Agent of the American Steel & Wire Co., Cleveland, has been appointed to the Board of Directors of that company.

**C. M. Betterton**, Purchasing Agent for the Southern Pacific Railway since 1933, has been appointed General Purchasing Agent for the company, with headquarters in San Francisco. M. C. Nystrom and E. J. Becker have been advanced from the position of Assistant Purchasing Agents to Assistant General Purchasing Agents at San Francisco.

**John Kemendo**, Assistant Purchasing Agent of the Guiberson Diesel Engine Co. at Garland, Texas, has been promoted to the office of Purchasing Agent. He succeeds Marson French, who has been placed in charge of the Production Control Department, correlating purchasing, materials, and production. Hix Freeman, formerly Purchasing Agent of the Bull-Stewart Equipment Co., has been appointed Assistant Purchasing Agent for the Guiberson organization.

**J. W. Hinchcliffe** has been appointed Chief Purchasing Agent at the Dallas plant of the North American Aviation Corporation, and W. T. Lynn has been

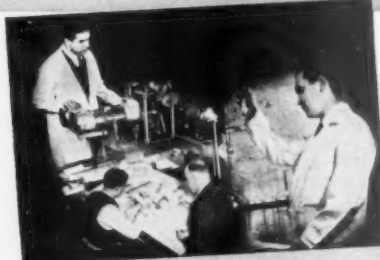
## To the MANUFACTURER with VISION for TOMORROW



*Technical* information regarding all types of SLEEVE BEARINGS such as Alloys, Lubrication, Design.



*Facilities* for complete manufacture of EVERY type of SLEEVE BEARING and BUSHING.



*Research* to determine the CORRECT answer to unusual bearing applications.



*Service* with capable field engineers located in TWENTY-TWO industrial centers.

## Here is how JOHNSON BRONZE can help you TODAY

War has interrupted normal business but it hasn't stopped thinking . . . and planning for tomorrow. Leading manufacturers in every line of products are now seeking new ways to improve . . . to cut costs . . . to increase performance. All this is possible with the right type of bearings. Why not ask a Johnson engi-

neer to review your bearing applications? Chances are ten to one that he can make a worthwhile suggestion . . . a recommendation backed by more than 30 years exclusive bearing experience. As we make ALL types of sleeve bearings, we hold no prejudices for any one kind. Your inquiry carries no obligation.



## JOHNSON BRONZE

*Sleeve* BEARING HEADQUARTERS

450 S. MILL STREET • NEW CASTLE, PA.

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# ★ GUARANTEED STRONGER ★

In an effort to present facts to the trade, we offer at right data covering Cleveland Hexagon Head Cap Screws made from S. A. E. 1035 steel, heat treated. These tests were made in an independent physical testing laboratory. Compare them with the strength of the screws you are now using, keeping in mind that Cleveland High Carbon Cap Screws, in most sizes, cost no more. Stocked from  $\frac{1}{4}$ " x  $\frac{3}{8}$ " to 1" x 6", fine or coarse thread, packages or bulk. Larger and longer sizes made to order. Write for samples, catalog E and discounts.

## HEXAGON HEAD CAP SCREWS 1035 HEAT TREATED

All results based on Root Diameter.

### TENSILE STRENGTH PER SQUARE INCH IN LBS.

Diameter	Test No. 1	Test No. 2	Test No. 3	Average
$\frac{1}{4}$ "-20	159,500	156,500	160,500	158,834
$\frac{5}{16}$ "-18	163,400	162,800	161,200	162,700
$\frac{3}{8}$ "-16	167,100	167,000	166,800	166,967
$\frac{7}{16}$ "-14	147,700	147,000	146,900	147,200
$\frac{1}{2}$ "-13	146,700	146,000	148,700	147,134
$\frac{5}{8}$ "-11	135,600	134,600	135,500	135,234
$\frac{3}{4}$ "-10	122,700	123,300	123,000	123,000
$\frac{7}{8}$ "-9	124,600	126,000	126,600	125,734
1"-8	118,400	118,000	118,900	118,434

THE CLEVELAND CAP SCREW COMPANY • 2934 East 79th Street • Cleveland, Ohio



# CLEVELAND CAP SCREWS

SET SCREWS • BOLTS AND NUTS

Address the Factory or our Nearest Warehouse: Chicago, 726 W. Washington Blvd. • Philadelphia, 12th & Olive Streets  
New York, 47 Murray Street • Los Angeles, 1015 E. 16th Street



# ARMSTRONG



## You can "eat your cake\* and have it too" with ARMSTRONG TOOL HOLDERS (\* High Speed Steel)

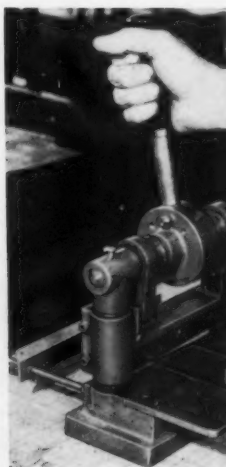
Take the high speed steel needed to make a forged tool for any operation on lathes, planers and shapers—by using an ARMSTRONG TOOL HOLDER for that operation you can have the same high speed cutting point and still have 90% of your high speed steel left over for other work. In ARMSTRONG TOOL HOLDERS each ounce of high speed steel will do the work of 10 ounces in a bar tool. And, every ARMSTRONG TOOL HOLDER is a permanent, multi-purpose tool that effectively replaces a complete set of forged tools. With each ARMSTRONG TOOL HOLDER a more efficient tool can be forged—a handier tool, with exactly correct cutting angles and approach angles, a more rigid, more accurate tool with strength to stand up to any speed or feed that the machine tool can attain. It is utter waste to forge tools for standard operations, especially today.

### ARMSTRONG BROS. TOOL CO.

"The Tool Holder People"  
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Eastern Warehouse & Sales Office:  
199 Lafayette St., New York



ARMSTRONG TOOL HOLDERS Are Used in Over 96% of the Machine Shops and Tool Rooms



## METAL DUPLICATING Without Dies



Users of Di-Acro Precision Machines—Shears, Brakes, Benders—are constantly showing us new time-saving, cost-cutting applications, in experimental work, for making small quantities of parts—or even production runs. They often save expense and delay of making dies, or parts of progressive die sets. They do many things dies cannot do.

Photo (courtesy Minneapolis-Honeywell) shows Di-Acro Shear No. 1, which squares up stampings, cuts strips, makes slits or notches. All work accurate to .001".

### Get New Catalog

It shows Di-Acro Shears, Brakes, Benders, illustrates many parts which can be made with this creative, flexible system of "Metal Duplicating Without Dies."

O'NEIL - IRWIN MFG. CO.  
305—8th Ave. S., Minneapolis, Minn.



named Chief Purchasing Agent at the Kansas City plant. Both Mr. Hinchcliffe and Mr. Lynn previously held the post of Assistant Purchasing Agent.

Guy L. Jackson, Purchasing Agent for Arizona's Public Institutions, addressed a meeting of the Coolidge Rotary Club, June 12th, describing the defense and conservation programs carried out in these institutions.

H. J. Parker, Purchasing Agent and Traffic Manager of the Mills Co., has been elected to the Board of Governors of the Cleveland Traffic Club.

1 1 1

### CLEVELAND COMPANIES WIN FIRST JOINT ARMY-NAVY AWARD



On Friday morning, May 22nd, The Cleveland Twist Drill Co., Cleveland, Ohio, was the first concern in the United States to receive the new Joint Army-Navy Award for outstanding service in war production. The Award consisted of a naval burgee, with a blue background, the words ARMY and NAVY in red and a large white star in the center. In the afternoon, the National Acme Co., also of Cleveland, received the same Award. These two are the first manufacturers selected to receive this high honor.

The presentation ceremonies were colorful and impressive, in the presence of some 1600 employees, including many men from a night shift who gave up some of their much needed sleep to witness the presentation.

The Mayor of Cleveland, Hon. Frank J. Lausche, presided. The presentation speech was made by Col. E. S. Reimel, of the Army and Navy Munitions Board, from Washington. The burgee was presented to President Jacob D. Cox and Clarence Stieglmeyer, representative of the employees, by Capt. E. B. Almy, Coordinator of Machine Tools, U. S. Navy, Washington. When the Color Guard raised the burgee to the flagstaff, the Hon. James V. Forrestal, Under Secretary of the Navy, spoke briefly outlining the important part The Cleveland Twist Drill Company has been playing in the war effort. Mr. Forrestal sketched the progress of the war to date and pointed out the vital importance of cutting tools not only in the production of machine tools, but also in the production of tanks, guns, ships, and a long list of war materials.

When writing advertisers please mention Purchasing



In 3 months one large  
 manufacturer buys supplies made  
 by 145  
 different manufacturers . . from one  
 local Supply Distributor, who  
 delivers every item from stock






## How are You buying Your Materials?

A prominent Mill-Supply Distributor writes:—"Our big, all-time job is to help War Plants who are our customers to produce faster—by keeping them furnished with equipment and supplies on schedule.

"Just how the Manufacturer can profit by the Jobber's alert, fast-moving service in his behalf is illustrated in the experience of one of our own customers—a Manufacturer we have served for many years. We analyzed our transactions during a typical 3-month period and dug up these impressive facts:—

**A—"Materials supplied by us to fill his orders during that 90-day period were produced in 145 different factories.**

**B—"Goods from these 145 factories were ordered and paid for by us, and came directly to our warehouse stock.**

**C—"Deliveries from our warehouse to this customer were nearly always made the same day we received his order."**

Depend on it—your Industrial Distributor will use every resource to supply what *you* need. He works in your interest all the time—as we know, because Mill Supply Houses have represented us in selling "Cleveland" High-Speed Twist Drills and Peerless High-Speed Reamers nationwide, for many years.

**The CLEVELAND TWIST DRILL COMPANY**  
 1242 EAST 49<sup>th</sup> STREET  
 CLEVELAND  
TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES  
 30 READE ST. NEW YORK    9 NORTH JEFFERSON ST. CHICAGO    650 HOWARD ST. SAN FRANCISCO  
 6515 SECOND BLVD., DETROIT    LONDON - E. P. BARRUS, LTD. - 35-36-37 UPPER THAMES ST. E.C.4



"CLEVELAND" DISTRIBUTORS EVERYWHERE ARE READY TO SERVE YOU

*When writing The Cleveland Twist Drill Company please mention Purchasing*



# PAGE FENCE

*America's First Wire Fence — Since 1883*



## **BARRIER AGAINST INTERFERENCE WITH AMERICA'S ALL-OUT PRODUCTION**

• No one can predict where treachery may attempt to strike, but industry can and will set up protections. Logically the first barrier should be at all property lines. Two important factors favor Page Industrial Fence. The first woven wire fence was Page Fence, and for 59 years its makers have held a forefront position in major developments. Page also originated localized experience and responsibility in fence engineering and erecting. When you specify Page Fence you deal with a nearby business man—one of 102 technically-trained, long-experienced firms which own their own plants and comprise the **PAGE FENCE ASSOCIATION**, Headquarters: Monessen, Pennsylvania.

**VICTORY FIRST**  
At the Page mills, men, machines and materials are on an all-out schedule for production of fence to protect plants working on Government orders

See ACCO advertisement in this issue, page 75

PRODUCT OF PAGE STEEL & WIRE DIVISION—AMERICAN CHAIN & CABLE COMPANY, INC., BRIDGEPORT, CONN.

## Here—Millions of BOLTS-NUTS-SCREWS

## for Defense—

## GENERAL SCREW MANUFACTURING CO.

1234 W. MONROE ST. CHICAGO, ILL.

These are the products you can use on production job after production job with the assurance that General Screw Manufacturing Company products will help you standardize, with uniformity, for economy and speed in production.

### **UNIFORM POLICY ON APPEALS TO WPB**

The War Production Board in June announced a uniform policy to be followed in considering appeals to continue production which was ordered halted by WPB conservation and limitation rules. "Priorities Unemployment" resulting from some of these orders is reported to have affected hundreds of factories and thousands of factory workers, under limitation orders which have restricted or prohibited the manufacture of hundreds of factories and thousands of factory workers, under limitation orders which have restricted or prohibited the manufacture of hundreds of articles and products.

WPB takes the stand that appeals will be granted only if the successful prosecution of the war is furthered thereby. However, there may be certain appeals for relief, where to deny the appeal would injure civilian economy without corresponding benefit to the war effort. In any case, appeals will be considered only after it is determined that no other adequate relief is available to the applicant.

Requests for permission to assemble processed inventories must meet the following tests to receive favorable consideration by WPB:

1. The processed inventory must be without salvage or reclaim value to war production.
2. The appellant must not be in violation of existing conservation, limitation or priority orders.
3. The appellant must not have purposely processed a large inventory with the view of requesting preferential treatment.
4. The labor to be employed for the assembling of the inventory shall not be required immediately for war production.
5. Granting the appeal must not give the appellant any substantial advantage over competitors in a like situation.

Various types of relief may be granted. Among these are the following:

1. Assistance in disposing of frozen inventory materials to other companies permitted to use them, or to government agencies.
2. Resale to the source of supply.
3. Assistance in obtaining war orders or in conversion of facilities to direct war production.
4. Advice on obtaining financial assistance from the bureau of finance in the Division of Industry Operations.
5. Assistance in the disposal of idle production equipment.

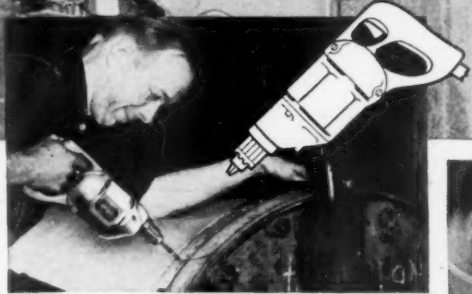
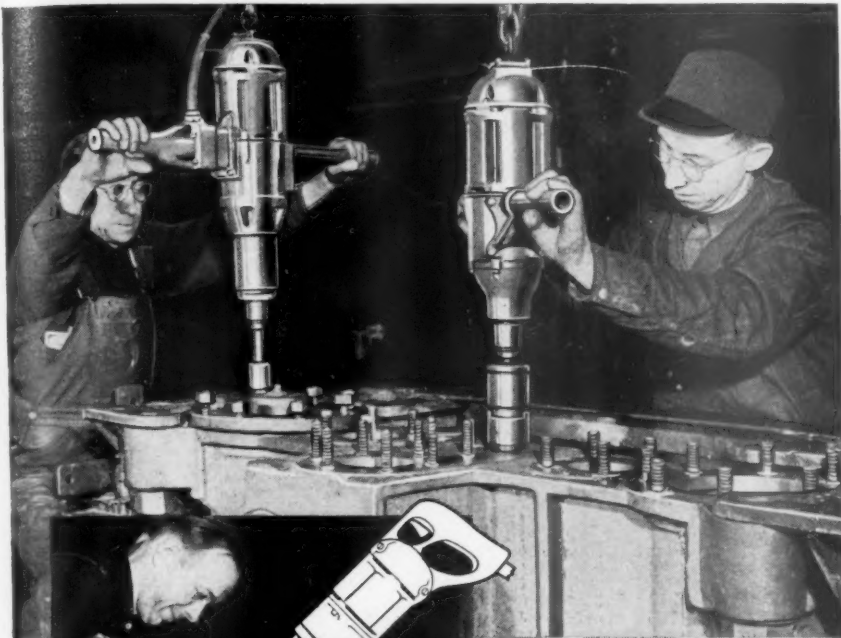
Consideration will be given to the appeal if granting it will help finance conversion to war work, or, if this is not the case, it will relieve the appellant's financial stress without interfering with the war effort in any way.

Permission will not be granted to use or procure materials which are very scarce, such as nickel or tungsten, except when the amount is extraordinarily small and the article to be manufactured will have an unusually high value to the national economy.

*When writing advertisers please mention Purchasing*



"Materially speeding up our production," says this manufacturer of heavy marine equipment. "Thank you for the assistance in setting up our newly formed production line for the manufacture of War Units . . . At present using Black & Decker Stud Setters, Nut Runners (shown below), Drills, Seruguns and Grinders . . . Especially appreciate your prompt parts and repair service."



"Considerable time saved in drilling, tapping and grinding," reports a manufacturer of machinery. "Also a high percentage of increase in production. Black & Decker Tools stand up under tough usage. We are also able to obtain parts for replacement of worn ones without any hold-ups."

"20% time saving with Black & Decker Seruguns," reports a maker of cases for explosives. "Smoother operation and equal pressure insure uniformity in driving screws."



"Indispensable for constantly increased production of aluminum and steel equipment for Navy Ships and Maritime Commission cargo vessels," says a manufacturer, one of whose workmen is shown above using a Black & Decker Electric Sander.



# War Plants Report Big Time Savings

with BLACK & DECKER  
Portable Electric Tools

"**I**NDISPENSABLE for constantly increased production," flashes one war-equipment manufacturer . . . "sanding time cut 50% to 75%," writes another user . . . "metal-cutting time trimmed 75%," says still another . . .

That's the report on Black & Decker Portable Electric Tools from the production front. For drilling, grinding, tapping, screw driving, sanding—for all kinds of production and assembling operations—Black & Decker Tools are powered to the job, built to "take it" on round-the-clock schedules. In the complete Black & Decker line there's a tool to fit every job that can be handled by portable electric equipment.

You, too, can have war production records like these reported here. Phone your Black & Decker Distributor. Or write direct to The Black & Decker Mfg. Co., 764 Penna. Ave., Towson, Md.



Army Ordnance manufacturer finds a special war-time use for a Black & Decker Bench Drill Stand and Nut Runner. In a special mounting, this equipment provides power for winding hose reel for Army Ordnance Greasing Equipment.

LEADING DISTRIBUTORS EVERYWHERE SELL

## Black & Decker

PORTABLE ELECTRIC TOOLS

From Showcases to Ships . . . the Black & Decker Grinder shown here is grinding funnels for cargo ships—in a shop now converted from showcase manufacture to naval war production.

When writing The Black & Decker Mfg. Co. please mention Purchasing

# Among the ASSOCIATIONS

## SHEPARD ELECTED PRESIDENT OF FORT WORTH ASSOCIATION

A. C. Shepard of the Lone Star Gas Company has been elected President of the Fort Worth Association of Purchasing Agents for the coming year, and S. J. Johnston of the Acme Brick Company was returned to the office of Secretary-Treasurer for his fifteenth consecutive term. Other officers chosen were:

*First Vice President*, Fred Cunningham of the Axtell Co.

*Second Vice President*, Walter Bell, Tarrant County Purchasing Agent.

*National Director*, Harry Huls of Armour & Co.

## MILLER CHOSEN PRESIDENT OF CANTON ASSOCIATION

Ralph R. Miller of the Deming Co., Salem, Ohio, has been elected President of the Purchasing Agents Association of Canton & Eastern Ohio for 1942-1943. Other new officers chosen include:

*Vice President*, M. J. Birzer, Jr., of Superior Switchboard & Devices Co.

*Secretary-Treasurer*, C. L. Witter of Reserve Printing Co.

*National Director*, W. C. Hollinger of Canton Hardware Co.

*Directors*, J. F. Buchman, Jr., of Frankham Brass & Bronze Co.; K. R. Foltz of Berger Mfg. Div., Republic Steel Corp.; L. F. Ryan of Ohio Power Co.; and M. F. Shaffer of Electric Sales Co.

## YODER HEADS AKRON BUYERS

Floyd Yoder of the Sun Rubber Company has been elected President of the Akron Purchasing Agents Association for the coming year, succeeding F. W. Miller of McNeil Machine & Engineering Co., who becomes National Director. Other new officers are:

*1st Vice President*, S. H. Stevenson of The Akron Porcelain Co.

*2nd Vice President*, L. A. Anderson of The Goodyear Tire & Rubber Co.

*Secretary-Treasurer*, S. L. Musson of The M. F. Murdock Co.

*Directors*, T. L. Cook of The Ornamental Iron Works Co.; M. B. Cowling of Bridgewater Machine Co.; and E. G. Hammack of The B. F. Goodrich Co.

## DETROIT BUYERS ELECT RENWICK

The Detroit Purchasing Agents Association has elected the following officers for 1942-1943:

*President*, C. I. Renwick of Bruce Products Corp.

*1st Vice President*, B. W. Johnson of R. C. Mahon Co.

*2nd Vice President*, E. M. Helwig of Burroughs Adding Machine Co.

*Executive Secretary*, L. G. Auberlin.  
*Treasurer*, R. P. Brickley of Borden's Farm Products Co. of Michigan.

## GRAND RAPIDS ASSOCIATION RE-ELECTS OFFICERS

The Grand Rapids Association of Purchasing Agents has re-elected its present slate of officers to serve for another year. The administration includes:

*President*, James E. Baker, City Purchasing Agent.

*Vice President*, George J. Rooney of American Seating Co.

*Secretary*, Gardner G. Willard of Grand Rapids Woodfinishing Co.

*Treasurer*, Hubert F. Knappe of Knappe & Vogt Mfg. Co.

*National Director*, Frank W. Clay of Imperial Furniture Co.

*Directors*, Lewis C. Wall of Michigan Bakeries; Edward L. Jacobitz of McInerney Spring & Wire Co.; and Harold A. Spring of Michigan Consolidated Gas Co.

## SAN FRANCISCO ELECTS NEW OFFICERS

At the annual meeting, June 18th, the Purchasing Agents Association of Northern California elected the following officers for 1942-1943:

*President*, Clyde S. Yerge of Oakland Public Schools.

*1st Vice President*, M. C. Nystron of Southern Pacific Co.

*2nd Vice President*, William C. Haack of M. J. B. Company and Western Can Co.

*Secretary*, O. Petersen of Braun-Knecht-Heimann Co.

*Treasurer*, Russell Hendrick of the E. H. Edwards Co.

*Directors*, Clarence G. Ayer of The Envelope Corp.; R. R. Bush of Pacific Coast Aggregates, Inc.; E. W. Harrell of American Brass & Copper Co.; H. O. Jaques of Pacific Hanifolding Book Co.; Fred Kelleway of California Wire Cloth Corp.; N. I. Norton of Pacific Coast Engineering Co.; and L. A. Wilbur of Tubbs Cordage Co.

Other meetings of the month included a luncheon meeting on June 4th, at which Lt. Comm. Emory Bronte, U. S. Navy, discussed "The Functions of the Army-Navy Munitions Board," and a luncheon on the 11th, featured by reports of the N.A.P.A. convention proceedings.

At luncheon meetings of the East Bay Group, in Oakland, Charles Howard of the Howard Terminal presented colored motion pictures of Mexico, Milton Greene of The Paraffine Companies spoke on "The Purchasing Agent and Safety," and reports of the N.A.P.A. convention were given.

On June 30th, the Association year

was brought to a close with the annual "Hands Across the Bay" luncheon, in Oakland, attended by members from both Oakland and San Francisco.

## LADIES' NIGHT AT LOS ANGELES

The Ladies' Night dinner meeting of the Los Angeles Purchasing Agents Association was held at the Elks Club, June 11th. The business session was limited to brief reports from the N.A.P.A. convention, and installation of the following new officers for 1942-1943:

*President*, E. W. Beck of General Petroleum Corp.

*1st Vice President*, Charles A. Keeble of Union Pacific Railroad Co.

*2nd Vice President*, Al R. Lama of Arrowhead and Puritas Waters, Inc.

*Secretary*, Dean L. Fisk of the University of Southern California.

*National Director*, Al J. Smith of Fibreboard Products, Inc.

*Directors*, Larry T. Bleasdale of Zellerbach Paper Co., and Gerald A. Selby of Los Angeles Chemical Co.

Entertainment consisted of an elaborate floor show, followed by general dancing in the ball room.

## BIRMINGHAM OFFICERS

J. W. Sledge of the National Cast Iron Pipe Company has been elected President of the Birmingham Purchasing Agents Association for the coming year. He succeeds L. C. Teague of the Tennessee Coal, Iron & Railroad Co., who becomes National Director of the Association. Other new officers are:

*1st Vice President*, Clyde Porter.

*2nd Vice President*, George L. Wilson.

*Secretary*, Bernie B. Jones.

*Treasurer*, T. H. Prater.

Martin J. Lide of the Birmingham office of the War Production Board addressed a luncheon meeting of the Association at the Redmont Hotel on June 11th.

## CINCINNATI OFFICERS

Louis G. Pochat, Jr. of the Procter & Gamble Company was elected President of the Cincinnati Purchasing Agents Association at the annual meeting held June 9th at the Hotel Alma. Other new officers are:

*Vice Presidents*, E. L. Clayton of The Philip Carey Co., and A. H. Bader of Joseph T. Ryerson & Sons Co.

*Secretary*, Jac Breese of Breese Brothers Co.

*Treasurer*, Robert J. Duerler of Cincinnati Milling Machine Co.

*National Director*, E. H. Cordes of The E. Kahn's Sons Co.

*Trustees*, Gilbert Riches of Andrews





(Illustration from photo by U. S. Army Signal Corps.)

## WHEN THESE FELLOWS WERE RIDING *Tricycles*



● *Twenty years ago*, as little lads, these fighting men of today were pedaling tricycles down quiet streets, with no knowledge of a war just ended; no idea of a still greater war to come—a war in which they were to play so important a part.

*Twenty years ago*, in a world at peace, The Sisalkraft Co. began producing a reenforced waterproof wrapping paper, later named FIBREEN, with no comprehension as to the important part it, too, would play in this world war.

For twenty years, The Sisalkraft Co. has been acclaimed the leader in the development and production of reenforced papers—papers that are recognized in all parts of the world because of their waterproof protective quality, and their almost unbelievable strength.

As a result of these twenty years of constant development and improvement, and due to exclusive construction methods and the designing of special equipment and machines, the FIBREEN of today requires a very minimum of sisal fibres.

In addition, there is a saving of vital time and labor because FIBREEN is now produced 15 times faster than many of the materials that it is so effectively replacing, and it is requiring only 11% as much labor. At the same time FIBREEN is releasing burlap, tarpaulin and other fabrics and wrapping materials for other important war uses.

The entire production of FIBREEN is now helping to solve the problem

of wrapping and protecting great quantities of war material, from tanks and planes to radios, guns and repair parts.

FIBREEN is waterproof—and tough. It is used as a wrapper, as a cover, or as a bag. It guards against damage from rain, dirt, sea water and long exposure to all kinds of weather.

If you are engaged in essential war production—if FIBREEN in your plant can replace and release other critical materials for urgent war uses, and solve your problem of protecting goods either in transit or in storage—write us and we'll try to help you. Tell us what you make and how you now pack it.

### THE SISALKRAFT CO.

Manufacturers of Sisalkraft, Fibreen, Sisal-X, Sisaltape and Copper-Armored Sisalkraft

205 W. WACKER DRIVE • CHICAGO, ILL.  
New York San Francisco London Sydney  
In Canada Write to Alexander Murray & Co., Limited  
at Montreal, Toronto, Halifax, Saint John,  
Winnipeg, Vancouver



SERVING INDUSTRY, CONSTRUCTION AND AGRICULTURE THROUGHOUT THE WORLD

When writing The Sisalkraft Co. please mention Purchasing





## When the requisitions call for Special Coating, Laminating or Adhesives for Paper or Cloth

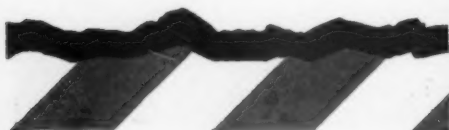
McLaurin-Jones offers equipment and personnel capable of taking in its stride every conceivable variety of paper and cloth coating, adhesive and laminating problem. Contractors and sub-contractors for war work, requiring special and unusual coatings, bindings or adhesives for either paper or cloth find our facilities adequate for the solution of the most difficult or unusual problems.

Recent activities include such diverse development as adhesives for sticking to various types of metals... lacquer films for widely varied uses; lamination and lacquering of aluminum foils; decalcomania paper for revenue stamps. Our two processing mills now produce GUMMED MATERIALS (i.e., label and Kraft papers; sealing, stay, veneer, and cloth tapes; holland, Sisaltape, etc.). COATED MATERIALS (i.e. casein coated, decalcomania, scientific chart and transfer papers, photo-mounting cloth and tissue), LACQUERED MATERIALS (pyroxylin coatings, photographic strip film, chart paper); LAMINATED MATERIALS, IMPREGNATING.

Write for booklet telling about our capacity for solving special problems, or tell us what your problem is. We'll be on the job to help you solve it!

### McLAURIN-JONES COMPANY

Mills: Brookfield, Mass. and Ware, Mass.  
Offices: New York • Chicago • Los Angeles



Steel Co., James P. Fath of Estate Stove Co., and George F. DeSilver of Pickering Hardware Co.

1 1 1

#### LOUISVILLE MEETING

The Louisville Association of Purchasing Agents held its annual outing at the New Albany Country Club, June 16th. The afternoon was spent at golf and swimming. At the dinner meeting, Prof. Charles W. Williams of the University of Louisville spoke on the current economic situation.

1 1 1

#### PLANT VISIT AT PROVO

The Purchasing Agents Association of Utah visited the Geneva Steel Works at Provo on June 11th. The trip through the plant was followed by a dinner meeting. George R. TenEyck of the Columbia Steel Co. was in charge of the arrangements.

1 1 1

#### OFFICERS INSTALLED AT TOLEDO

The June meeting of the Toledo Purchasing Agents Association was held at the Sunningdale Golf Club on the



### STRAUBEL Texturized TOWELS

• There's real economy in this better towel. Its high absorption capacity and quick drying action, plus the fact no fuzz is left on the skin, makes it the perfect towel for office and factory washrooms. Conserve on towels by eliminating waste—order Straubel Texturized Towels!

*Straubel*  
PAPER COMPANY  
GREEN BAY, WISCONSIN

## War workers O.K. this new water service



You can promote good health, save production time, and improve morale, by serving drinking water to employees at their machines... in clean Ajax Cups!

A "water boy" circulates throughout the plant—as on large construction jobs. He carries a tank of fresh, cool drinking water and a supply of clean Ajax Paper Cups in a dust-proof Ajax steel dispenser fastened to the tank.

Address Dept. 7-P at the plant nearest you.

LOGAN DRINKING CUP CO., 68 Prescott Street, Worcester, Mass. • PACIFIC COAST ENVELOPE CO., 416 Second Street, San Francisco, California  
U. S. ENVELOPE CO., Los Angeles Division, 2828 East Twelfth Street, Los Angeles, California.

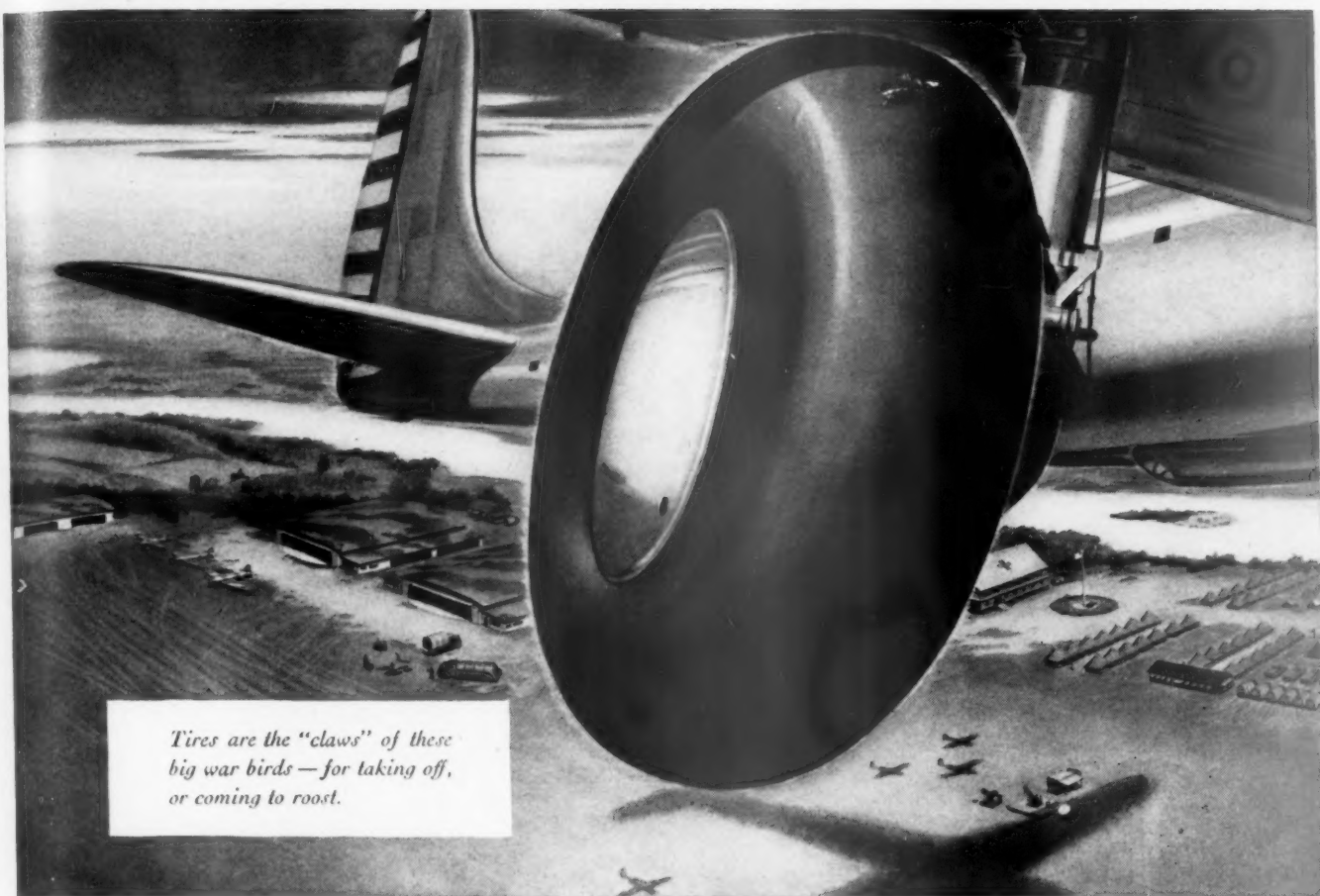
Divisions of United States Envelope Company



Ajax Mobile Water Service is used widely on Defense construction jobs. Saves time, promotes health, improves morale. Perhaps you can use it—send for information.

## AJAX CUPS

Any drinking fountain can easily be equipped so that AJAX cups can be used



*Tires are the "claws" of these big war birds—for taking off, or coming to roost.*

## In each claw . . . 15,000 feet

A big bomber's tremendous weight, and take-off and landing speeds, put a terrific strain on tires. To make them super-strong, into the beads of each tire go over 15,000 feet of steel wire—almost three miles of it!

This wire is but one type of the "everything in wire" that is now streaming through Wissco's blast furnaces, open hearths, and seven mills. Every foot of it is dedicated to the job of helping America win . . . and fast!

And in every *inch* of it is the *uniformity* and *quality* that have made the name Wissco famous. Wickwire Spencer Steel Company, 500 Fifth Avenue, New York; Buffalo, Chicago, Detroit, Philadelphia, San Francisco, Worcester.

**EVERYTHING IN WIRE.** High and Low Carbon Wire—Round and Flat Wire—Wire for Springs, for Wire Rope, for use in scores of industries, in a variety of sizes, tempers, grades and finishes.



**Continuous Research** during 121 years of wire manufacture has enabled Wissco to help its customers find answers to all sorts of wire applications. Have you a wire question on which we can help?

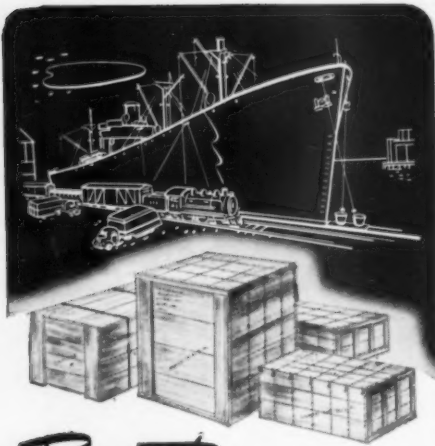
SEND YOUR WIRE QUESTIONS TO WICKWIRE SPENCER

**WISSCO**  **WIRE**  
**BY WICKWIRE SPENCER**



*When writing Wickwire Spencer Steel Company please mention Purchasing*





## Beat The Shipping Promise, Too!

• Engineered shipping containers speed up war products delivery schedules, help solve transportation problems; assure easier, faster handling — adequate protection with minimum tare weight.

For overseas or overland shipments, General Boxes, crates and special containers are being used to keep foods, chemicals, metal parts, munitions and other materials flowing to the armed forces. Scores of concerns are using them to help beat their shipping promises.

Engineered to meet specific requirements, General containers conserve vital man-hours, save space in ships, trucks, trains, and in the shipping room. The General All-Bound, for example, is delivered to the shipper 2/3 assembled. Even inexperienced workmen can assemble it in record time. No nails are required. By simply bending the sturdy wire loops down, it can be closed and securely sealed. Maximum protection for the product is assured.

Let us help you get your products to Uncle Sam, or to war products assembly lines faster. Our thirteen strategically located plants permit faster service to concerns in all parts of the country. Mail the coupon.

## GENERAL BOX COMPANY

General Offices: 48 W. Illinois St., Chicago, Ill.  
District Offices and Plants: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon, Continental Box Company, Inc.: Houston, Dallas.

General Box Company  
48 W. Illinois St., Chicago, Ill.

- ☐ Send copy of free book, illustrating engineered shipping containers.  
☐ Have a General Box engineer call.

Name .....

Address .....

City ..... State .....

18th. Newly elected officers, as announced in this column last month, were installed. National Director Gordon S. Yost gave a report on the N.A.P.A. convention proceedings.

### BUFFALO BUYERS ELECT

Raymond F. Holland of the Buffalo Boat Co., North Tonawanda, has been elected President of the Buffalo Purchasing Agents Association for the coming year. George C. Kratzer of the Houde Engineering Corp., is the new Vice President.

### COLUMBUS OUTING

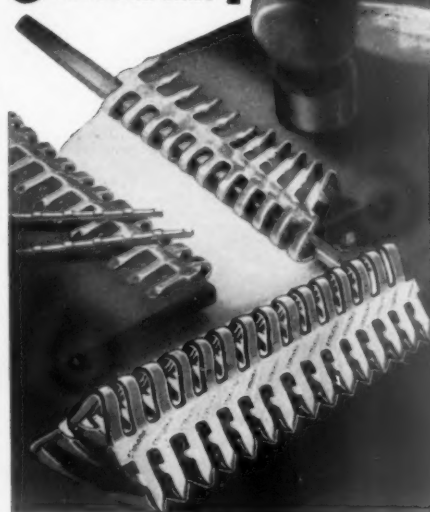
The annual golf party of the Columbus Purchasing Agents Association was held at the Scioto Country Club, June 19th, with more than a hundred members and guests in attendance. The program included a golf tournament, aquatic program, and entertainment. Officers for the new year were introduced at the dinner session.

### WESTERN MASSACHUSETTS ASSOCIATION

The June meeting of the Purchasing Agents Association of Western Massachusetts was held at the Springfield Country Club, on the 11th. The dinner meeting was preceded by a golf tournament. Joseph Drennan reported on the

## ARMSTRONG-BRAY STEELGRIP

FLEXIBLE BELT LACING



Immediate  
Delivery!

—on both standard types of belt lacing.

STEELGRIP that is applied with a hammer that penetrates belting easily and clinches securely to make a strong, flexible, smooth joint. 2-piece hinged rocker pins take up wear. In boxes or long lengths for wide belts, it compresses belt ends and prevents fraying, 8 sizes.

**ARMSTRONG-BRAY & CO.**  
"The Belt Lacing People"  
5378 Northwest Highway Chicago, U.S.A.



BELT  
HOOKS

Applied with any standard make lacing machine, these belt hooks come on double (patented) aligning cards that hold hooks in perfect alignment and prevent card end waste. 6 sizes.

# Pick 'em right

For faster, easier metal sawing—and to make your VICTOR Hand Hack Saw Blades last longer — clip and keep this handy chart. It's from the helpful, 20-page VICTOR booklet, "Metal Cutting" — yours free for the asking.

## VICTOR HAND HACK SAW BLADES STANDARD RECOMMENDATIONS

MATERIAL	TYPE BLADE	TEETH IN.
Aluminum	"Moly" All Hard	14
Brass	"Moly" All Hard	14
Conduit	"Moly" Flex. or Spec. Flex.	24
Copper	"Moly" All Hard	14
Drill Rod	"Moly" All Hard	24
Hard Alloys	"Moly"	18
Light Angles	"Moly" All Hard	18
Metal Trim	"Moly" Flex. or Spec. Flex.	24
Pipe Tubing	"Moly" Flex. or Spec. Flex.	24
Sheet Metals	"Moly" All Hard	18
Soft Steel	"Moly" All Hard	14
Steel Pipe	"Moly"	24
Thin Tubing	"Moly" Flex. or Spec. Flex.	32
Thin Wall Metals	"Moly" Flex. or Spec. Flex.	32
Tool Steel	"Moly" All Hard	18

Power Blade Recommendations, hand saw recommendations and plenty of helpful tips on choosing and using blades and frames are in this free booklet. Use coupon to get your free copy now!

**VICTOR** MOLY HIGH SPEED  
**VICTOR** UNBREAKABLE SPECIAL FLEXIBLE



Victor Saw Works, Inc., Middletown, N. Y.  
Please send immediately my copy of "Metal Cutting"—FREE.  
Name ..... Title .....  
Company Name .....  
Address .....  
City ..... State .....



# APEX

## POINTS

### the way to increase production.

It's just a matter of simple arithmetic.

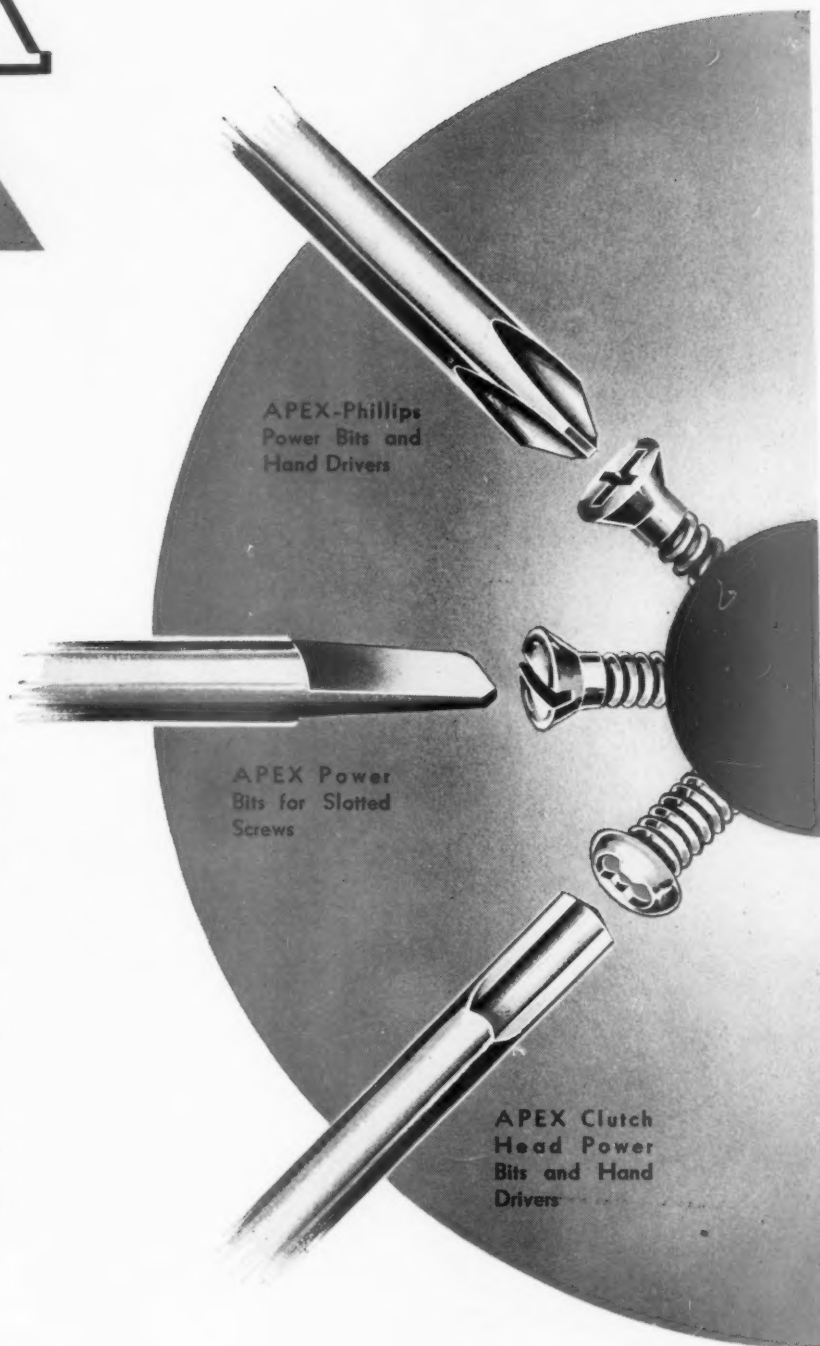
Consider the number of screws driven per hour by each Bit. Multiply that by the number of drivers. Then figure the loss in production every time a bit breaks, or wears out too soon, and the time out to make replacements.

APEX Power Bits and Hand Drivers have established phenomenal production records for long life and continuous service. Reasons: finest tool steel obtainable for the purpose; precisely engineered for each power driver; precision machined; properly and carefully heat-treated for toughness and long life.

In addition, APEX-Phillips Power Bits can be reconditioned time after time at a substantial saving. Each reconditioning shortens the Bit only  $\frac{1}{8}$ ", and it is just as serviceable as a new one.

APEX Clutch Head Bits can be reconditioned by the user. As the Bit wears, it is only necessary to grind away the worn section. APEX Clutch Head Bits are made to accommodate several grindings.

APEX Points — the Way!



The **APEX**  
MACHINE & TOOL COMPANY  
*Dayton, Ohio*

## Mass Production of Hose Clamps Speeded With

### WITTEK Automatic ROLL FEEDS FOR PUNCH PRESSES



In the all-out war production of Wittek Hose Clamps for aircraft, tanks, jeeps, trucks, and engines, the making of stampings from coiled strip stock is a major operation.

To attain this mass production schedule, speed, accuracy and efficiency in feeding the metal to punch presses were essential. Wittek pioneered and developed the Wittek Automatic Roll Feed for that purpose. It has been proven on Wittek's and many other production lines, as the most important contributing factor for maintaining those present high production levels. Wittek Automatic Roll Feeds and Reel Stands are made available to other manufacturers who fabricate parts from coiled stock and demand speed and efficiency in their punch press operation. Write for catalog, prices and specifications.

Wittek Automatic Roll Feeds and Reel Stands are designed to fit all makes and sizes of punch presses and made in various types for every requirement in the automatic feeding of coiled strip stock.



Wittek Hose Clamps, for over twenty years identified with the Automotive and Aviation industries, are noted for their permanent leakproof hose connections. For original equipment and replacement.

**WITTEK MANUFACTURING CO.**  
4305-15 W. 24th Pl., Chicago

N.A.P.A. convention, and Stephen J. Kennedy, National Vice President, spoke on National Association affairs.

#### TRI-CITY BUYERS HAVE PLAY DAY

The annual "Play Day" of the Tri-City Purchasing Agents Association was held at the Clinton Country Club, June 9th, with an attendance of more than a hundred. Chief attraction in the afternoon was the golf tournament, with sand trap penalties accounting for a sizable sum donated to the USO. The dinner meeting was held at the clubhouse, R. N. Howes being the speaker.

#### NEW ENGLAND OUTING

The 36th annual outing of the New England Purchasing Agents Association was held at the Belmont Country Club, June 25th. C. N. Buckley was Chairman of the committee in charge, assisted by D. G. Donovan, C. S. Eaton, H. J. Kay, J. L. Kelty, J. T. Lane, D. A. Lynch, R. W. Remington, D. L. Sullivan, and J. L. Travers.

#### NORTHWESTERN PENNSYLVANIA BUYERS ELECT HOLDEN

The June 4th meeting of the Purchasing Agents Association of Northwestern Pennsylvania was held at the Emery Hotel, Bradford. The program was devoted to reports of the N.A.P.A. convention by members who had attended



### Thousands of PRODUCTIMETERS

are recording

#### ALL-OUT PRODUCTION

Industry knows Productimeters. Years of research and engineering are behind their accuracy...their speed...their precision...their rugged construction...their dependability for reliable production control. **PRODUCTIMETERS** are prepared now to answer the call on our first line of defense. the production machines of America.

Write today for  
Complete Catalog!

#### DURANT MFG. CO.

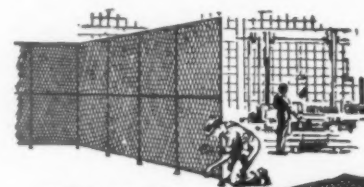
1959 N. Buffum St.  
Milwaukee, Wis.

159 Eddy St.  
Providence, R. I.

**PRODUCTIMETERS**  
THE SPEEDOMETERS OF INDUSTRY



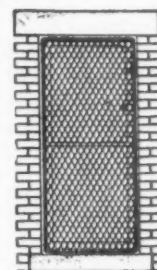
Converting waste outdoor areas into valuable storage space is one of the advantages of a Stewart Non-Climbable Chain Link Wire Fence. Thus Stewart Fences make available indoor space for increased production which might otherwise have been required for storage.



#### WIRE MESH PARTITIONS

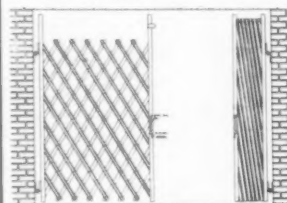
Stewart Wire Mesh Partitions allow light and ventilation. They are sectional and may be interchanged or rearranged to fit any space. Wire partitions are ideal for locker rooms, toolrooms, stock rooms, etc.

Stewart Window Guards are available in iron or wire and can be furnished in sizes and shapes to fit any opening.



#### WINDOW GUARDS

Steel Folding Gates are furnished in single or double construction with or without overhead track to fit any size opening.



#### STEEL FOLDING GATES

Send for Catalog I-41 which gives complete details on Stewart Non-Climbable Chain Link Wire Fence and other accessories in iron and wire for industrial purposes. Stewart maintains sales and erection service in principal cities.

**THE STEWART IRON WORKS CO., INC.**  
961 Stewart Block, Cincinnati, Ohio





## Out of the Experience Of Today, Tomorrow's Advancement

NEVER before has equipment been called upon for such overloads, materials for such performance, man's brain for such results! Though it takes a harsh toll, war is a school. Forced out of beaten paths, we are now learning to use many a new method, many a new material. For those who study and keep records as they carry on war's work, the future should be rich in opportunities for more beautiful, more efficient, more economical products.

As a helping hand to those now using Seymour Products, we offer the unlimited services of our laboratories and our staff of technicians—for better methods of handling today's war production—for improvements to come when the war is over.

# SEYMOUR

NON-FERROUS ALLOYS  
SINCE 1878



THE SEYMOUR MFG. CO.  
Seymour, Conn.

that gathering. The following officers were elected for 1942-1943:

*President*, C. H. Holden of Raymond Mfg. Co., Corry.

*Vice President*, P. L. Gideon of Cyclops Steel Co., Titusville.

*Secretary-Treasurer*, E. C. Walker of Kendall Refining Co., Bradford.

*National Director*, A. W. Clinger of The Pennzoil Co., Oil City.

It was voted to continue meetings through the summer months, in view of important developments in materials and procurement matters.

### CHICAGO ASSOCIATION

Carl Taylor, Executive Vice President of the Wisconsin Building and Loan League, Milwaukee, addressed the June 11th meeting of the Chicago Purchasing Agents Association on "What Must We Do to Defend America?" Officially this meeting marked the close of the Association schedule until regular meetings are resumed in September. The officers announce, however, that forum meetings may be called from time to time during the summer months if new regulations or procurement problems develop, of sufficient importance to warrant such discussions. Golf outings and plant visits have been definitely crossed off the Association calendar for the summer.

### ST. LOUIS MEETING

George Blowers, Assistant Chief of the Bureau of Governmental Requirements, W.P.B., and formerly Purchasing

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★ Yes, we're galvanizing tons of material for the U. S. Navy and private shipyards . . . Greater tonnages than ever before in all our more than 40 years of service! And, it's being done at top speed!

Yet, this "front line" service has not absorbed our entire capacity . . . Thanks to a plant planned and manned for quality production in huge volume, we're still able to do more to accelerate the war effort.

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★ SEND IT TO ENTERPRISE!  
Prompt shipments made via boat, truck or any railroad. Galvanized products furnished.

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**UNUSED  
CAPACITY**  
on the job?

IT'S there, if you'll put it to work! Your men can release the unused capacity without extra exertion simply by using Delta files. In test after test, Delta has accomplished on the average 25% or more work than ordinary files in identical time and conditions. You can easily see why in your own tests—when you notice the curling Delta "shavings" which mean increased work per man. Give Delta the show-down test to speed production. Order from your distributor.

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Keep 'Em Rolling  
**VICTORY**  
with ~~DEFENSE~~  
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**BOND 36-A CASTER.** Basically different in design, this caster combines easy swiveling with long service. The "reason why" lies in the arrangement of its ball races and its use of durable Bond Caster metal. Pressure lubricated throughout.



**BOND 40-A CASTER.** The preferred light-weight caster for heavy duty. Sturdy, all steel construction reduces caster breakage ... cracking ... or excessive wear even under peak loads. Swivels with frictionless ease. Pressure lubricated throughout.

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BOND FOUNDRY & MACHINE CO., MANHEIM, PA.

**Bond**  
REG. U.S. PAT. OFF.  
**TRUCK CASTERS**

ing Agent for the State of Missouri, spoke on "The Problems of Municipalities" at the June meeting of the St. Louis Purchasing Agents Association, at the Mark Twain Hotel on the 16th. William Krueger of the Ralston Purina Co. gave a report on the highlights of the N.A.P.A. convention.

#### PAST PRESIDENT'S NIGHT AT SYRACUSE

The June meeting of the Purchasing Agents Association of Syracuse & Central New York, held at the Onondaga Hotel on the 23rd, was designated as "Past Presidents' Night" in honor of the men who have led the Association in previous years. Speaker of the evening was Dr. Gilbert, whose topic was "New Ideas for Old Fogies." The Association's summer party will be held at the Syracuse Yacht & Country Club, July 15th.

#### RENARD AT NEW YORK

George A. Renard, Executive Secretary-Treasurer of the National Association of Purchasing Agents, addressed the June meeting of the New York Association at the Builders' Exchange Club on the 16th. Under the familiar title, "From One P. A. to Another," he gave a frank and illuminating talk on the outlook for business and economic life, based on his intimate contacts with WPB and OPA in Washington, predict-

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FOR YOU...**  
*Mr. War Manufacturer*



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● For helpful tips, get "Metal Cutting", free 20-page STAR booklet that shows your men how to get the most from the STAR Blades you buy.

Packed with facts on blade and frame selection, use and care. Write for it.



**CLEMSON BROS., INC.**  
Middletown, N. Y.

ing a period during which greater efforts and sacrifices will be demanded toward the primary objective of winning the war and building the world of the future. Walter E. Cummin was elected and installed as President of the Association for the coming year, together with the other members of the new administration.

#### OREGON ASSOCIATION

Gordon Lindsey, National Director of the Oregon Purchasing Agents Association, reported on the national convention at a dinner meeting of the Association, held June 8th at the Mallory Hotel.

#### CONNECTICUT ASSOCIATION CONCLUDES SEASON

The Connecticut Association of Purchasing Agents held its final meeting of the season at the Union League Club, New Haven, June 23rd. Because of present business conditions and restrictions on time and travel, the customary Ladies' Day program has been deferred, but the meeting was given over principally to entertainment.

#### SPRINGFIELD ASSOCIATION

W. E. Campbell, Past President of the Dayton Association, now assisting in the war program, addressed the Springfield (Ohio) Purchasing Agents Association at the Shawnee Hotel, June 10th, dis-

## Are Your Men Innocent Saboteurs?

Do they mark important materials so markings become indistinct or even rub off or fade—causing loss of valuable time in re-classifying? Don't take chances! Use a marking material that "stays put"—that provides positive, instant identity—regardless of weather or time. Use

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Forty-two different tempers, pitches and sizes have been perfected to date, with extra-hardened teeth to take care of every sawing job faster and better.

Above view shows how operator saws with the aid of the magnifying attachment for great precision in slotting brass brush holders at Marion Steam Shovel Company.

DoAll Band saws come in 100-ft. coils in metal boxes with slots, through which the desired saw length is easily pulled and cut off.



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Associated with Continental Machines, Inc.  
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SAFE AND SURE  
REVERSIBLE  
RATCHET THAT  
WILL SAVE  
TIME AND  
MONEY

A New Handle for  
any broken one  
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**LOWELL WRENCH COMPANY**  
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cussing governmental purchasing procedure. The Dayton and Springfield groups met for their annual get-together at Dayton on the 11th. The meeting of June 24th was held at the home of Oscar Gano of the Crowell-Collier Publishing Co., and was devoted to report of the N.A.P.A. convention.

### PITTSBURGH LADIES' DAY OUTING

The annual summer outing of the Pittsburgh Purchasing Agents Association was held at the South Hills Country Club, June 23rd. The program included golf and bridge in the afternoon, a cocktail hour, dinner and dancing.

### TWIN CITY BUYERS HOLD OUTING

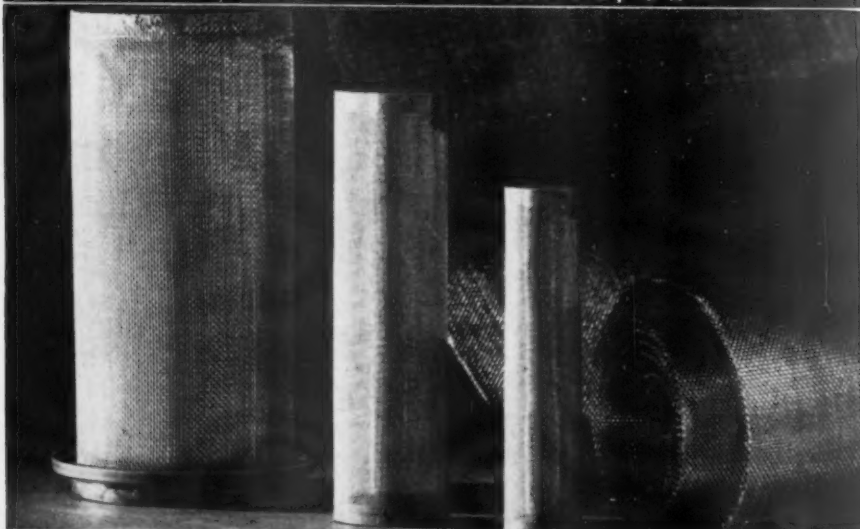
The June outing of the Twin City Purchasing Agents Association took place at the White Bear Yacht Club, Dellwood, Minn., on June 24th. A full program of water sports, golf and tennis, occupied the afternoon, followed by a dinner dance. Paul Trapp was chairman of the committee in charge.

### ANNUAL MEETING AT MILWAUKEE

The annual meeting of the Milwaukee Purchasing Agents Association was held at the North Hills Country Club, June 19th. Principal item of business was the election of officers for 1942-1943, which resulted as follows:

## JELLIFF WIRE CLOTH...

BY THE ROLL, CUT TO SHAPE, OR—



fabricated ready for assembling into your product. Purchasing departments the country over have proved it pays to order from JELLIFF—an organization that draws wire; weaves wire in all meshes and materials; and fabricates everything from heavy dipping baskets to tiny fine mesh strainers. Ask us to quote on your requirements. "Wire Products Since 1880"

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Secretary, R. W. Brick of Pittsburgh  
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Treasurer, L. C. Stilp of Kimberly-  
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National Director, A. O. Hinz of  
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Schulz Co.; and E. L. Janke of Jos. T.  
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**SOUTH BEND ASSOCIATION  
ELECTS DIECKMANN**

The following officers were elected at  
the recent annual meeting of the Pur-  
chasing Agents Association of South  
Bend:

President, W. V. Dieckmann of Sim-  
plicity Pattern Co., Niles, Mich.

Vice President, Lawrence J. Munzen-  
maier of C. G. Conn, Ltd., (Drum Divis-  
ion), Elkhart, Indiana.

Secretary-Treasurer, A. W. Koehnke  
of Koontz-Wagner Electric Co., South  
Bend.

National Director, J. M. McCarthy of  
O'Brien Varnish Co., South Bend.

**TULSA BUYERS REVIEW  
N.A.P.A. CONVENTION**

The June 9th dinner meeting of the  
Tulsa Purchasing Agents Association

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CLOTH**  
and WIRE CLOTH PRODUCTS

**3-in-1 Answer to Your Problem**



**Objective**

- Uniform Workmanship
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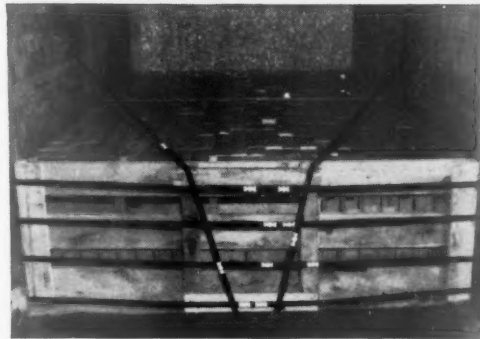
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Carload shipment of shells for the U. S. Army

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The methods insuring safety at the point of delivery  
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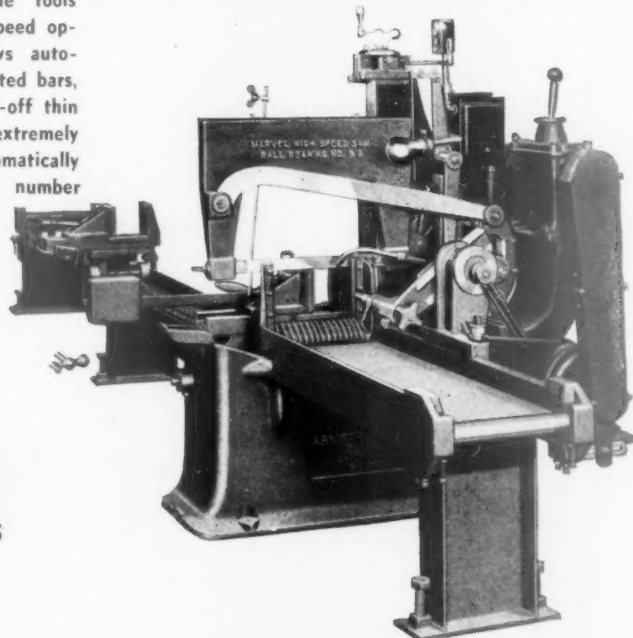
2602 N. Western Ave. Chicago, Ill.  
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**25 Years of  
Packing Improvement**

**10" x 10"**

Capacity and more pieces cut-off from bar  
per hour than by any other method.

Strictly production machine tools  
built for continuous high speed op-  
eration, MARVEL 9A Saws auto-  
matically feed single or nested bars,  
accurately measure and cut-off thin  
slices or long lengths at extremely  
high speeds. Stop automatically  
when completing desired number  
of pieces.



**MARVEL**

No. 9A Production Saws

Full ball-bearing construction throughout. Combination posi-  
tive-and-friction feed. Depth gauge will raise blade at any  
desired depth of cut, (for notching or slotting). Blade always  
horizontal, cuts on draw stroke, raises out of cut on fast  
return. Rigid saw frame is reciprocated by crank lever or  
shaper link action (33 1/3% faster than ordinary crank  
action). Serves as both production and fast, accurate, general  
purpose saw. Automatic bar push-up can be disengaged at  
any point, a miscellaneous cut made, and production work  
resumed immediately.

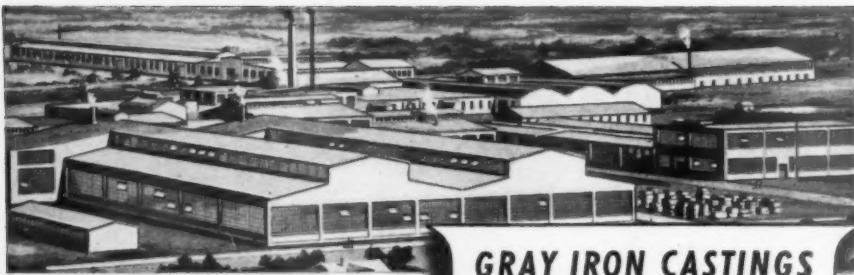
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MFG. CO.**

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Our efficient modernly equipped foundry of 160,000 square feet area has a capacity of 70 tons per day. Molding facilities comprise the usual bench and floor molding with squeezer and sand-slinger equipment. . . Sheet metal shop of 30,000 square feet in area is equipped to handle practically any job of fabricating light sheet metal. . . Experienced

steady workmen supervised by capable engineers. Have been operating successfully and continuously since 1895. . . Investigate our facilities for contributing to your production program. Our engineers will be glad to go into details with you at your offices or to show you through our plant at Medina, Ohio, 28 miles from Cleveland.

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*It Cuts — TO BEAT THE BAND*



"For superior specialized Band Saw cutting service—try Spartans."

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Springfield, Massachusetts



**Welded Stainless  
Tubing**  
4" to 14 3/4" O.D.

Uniformity in roundness and in quality of welding characterizes Pittsburgh Piping Welded Stainless Tubing. Available in most stainless alloys, in sizes 4" O.D. to 14 3/4" O.D., and in wall thicknesses ranging from 7/64" to 1/2". Write for data sheet.

**PITTSBURGH PIPING & EQUIPMENT CO.** 10 FORTY-THIRD ST.,  
PITTSBURGH, PA.

was featured by a review of the N.A.P.A. convention sessions and activities. Reports were given as follows:

H. C. Hampton of Consolidated Supply Co., 'Early Birds' Dinner and Banquet.

G. C. McLaren of Shell Oil Co., general sessions.

O. E. McClatchey of Barnsdall Oil Co., Oil Company Buyers' group sessions.

F. W. Robertson of Skelly Oil Co., forum meetings.

H. M. Cosgrove, general report and Inform-A-Show.

Mrs. H. C. Hampton, ladies' entertainment.

Fred E. Cooper, a non-member's viewpoint.

#### **AIRPLANES GENERATE POWER FOR MACHINE SHOPS**

New airplane engines which once consumed great quantities of aviation gasoline but did no useful work during breaking-in runs now have been harnessed to produce power for machine tools and lights, according to R. H. Wright, engineer at the Westinghouse Electric and Manufacturing Company.

The new power-producing method has been achieved by harnessing the airplane engines to ordinary generators of the type long used in small Diesel-electric power plants. Westinghouse already has supplied one large airplane manufacturer with 16 of these generators.

By installing generators in test cells, each aircraft engine can produce about 2,000 kilowatt-hours during its test runs. Generators now in use in one factory will produce each month more than 4,000,000 kilowatt-hours, worth about \$24,000.

That much electricity is enough to supply the entire factory—driving lathes, drills, grinders, boring machines and other machinery used to manufacture airplane engines, as well as supply factory lights. In less than two and one-half years, the generators will pay for the additional cost of their installation.

The generators can also operate as motors to crank the stiff, new engines for their first trial run. Then, after the engines gain speed under their own power, the electrical machines automatically become generators, producing power instead of using it. By measuring the

**ALLEN FLUX**  
Non Acid Soldering Flux  
Solder All Metals  
Fast working — Dependable  
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amount of electricity generated, engineers can tell whether the engine is running properly. Such accurate checks are not possible when the engines drive propellers in test cells not equipped with generators.

Test cells that use generators can be built smaller and less expensively. Propellers make so much noise their cells must be built larger and with sound baffles to keep them from being a civic noise nuisance. Otherwise, a battery of aircraft test cells would create the incessant sound of a low-flying squadron of bombing planes.

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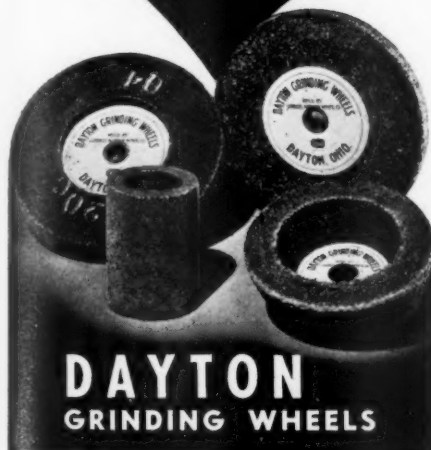
#### NE ALLOY STEELS

NE (National Emergency) Alloy Steels are those new "lean" alloy steels established by the metallurgical staff of the War Production Board to help conserve nickel, chromium, vanadium, etc., for the duration. To make these new alloys quickly available, Joseph T. Ryerson & Sons, Inc., has planned a representative stock of hot rolled rounds in sizes ranging from 1/2 to 7 inches in diameter and in six different analyses. Heretofore, these new steels have not been available for experimentation and it has been difficult to secure even small lots necessary for determining the suitability of the steels for an application. Now, manufacturers can get small lots for treating and testing in specific applications. This method will assure proper selection of steels, which can then be

## TECHNICALLY CORRECT

Dayton wheels . . .  
manufactured to  
exact specification.  
Made in all types,  
sizes, grains, bonds  
and grades.

SIMONDS WORDEN  
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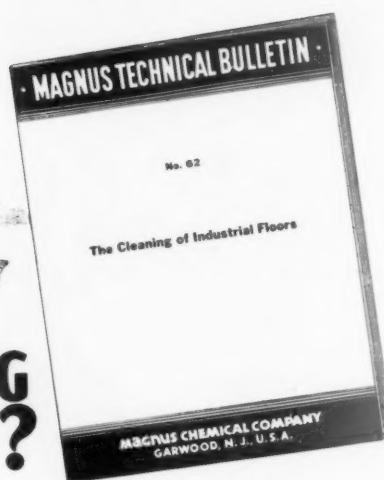


**DAYTON**  
GRINDING WHEELS



Here's a technical bulletin which covers the kinds of cleaners suited to the various types of floor surfaces. It indicates the cleaning routines best adapted to keep floors clean and safe—for personnel and for long service life.

You will find it full of useful ideas you can apply in your plant—ideas that will cut floor maintenance and cleaning costs in the bargain.



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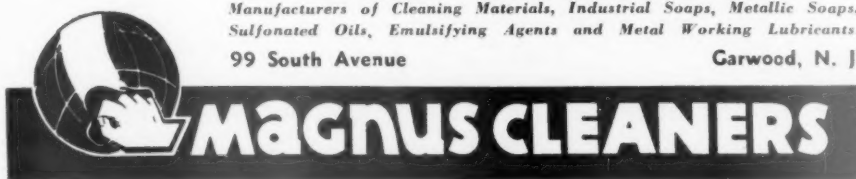
Magnus Technical Bulletin No. 52, "The Cleaning of Industrial Floors" is a straightforward presentation of the basic facts on floor cleaning. It will be a mighty useful and much used addition to your files.

#### MAGNUS CHEMICAL COMPANY

Manufacturers of Cleaning Materials, Industrial Soaps, Metallic Soaps, Sulfonated Oils, Emulsifying Agents and Metal Working Lubricants.

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With more and more steel needed for ships, shells, tanks and guns, there will be less for industry in general.

That means there will be fewer Witt Cans and Pails made for general use as long as this emergency exists.

But, regardless of the number of cans and pails we are permitted to make, the established reputation of Witt Quality will never be sacrificed.



Wherever good cans are used, the name Witt is highly respected.

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In these days of priorities, shortages and substitutions, service is a problem, but JESSOP can help solve it when you need tool steels, alloy steels, stainless steels, stainless-clad and composite steels.

JESSOP maintains warehouses, branch offices and sales representatives in the principal industrial centers. JESSOP men are steel specialists—call on them for assistance.

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**JESSOP STEELS** FOR AMERICA AND HER ALLIES  
CARBON • HIGH SPEED • SPECIAL ALLOY • STAINLESS • COMPOSITE STEELS

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**NUTS & BOLTS  
CAP SCREWS  
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**WASMER BOLT & SCREW CORP.**

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ordered confidently in production quantities.

Initial stocks will consist of six analyses: (1) carburizing alloys, NE 4023 and NE 8620; (2) medium hardening alloys, NE 4042 and NE 8744; (3) high hardening alloys, NE 4047 and NE 8749. It is believed that these new alloys, properly selected and heat treated, will satisfactorily replace the higher alloy content steels formerly used, except in very special applications.

### Carburizing Grade

NE (National Emergency) Alloy Steels	Replace AISI & SAE
	2300
	2500
NE 4023	3100
NE 8620	4100
	4600
	5100
	6100

### Medium Hardening Grade

NE (National Emergency) Alloy Steels	Replace AISI & SAE
	2330-35
NE 4042	3130-35
NE 8744	4130-35
	5130-35
	6130-35

### High Hardening Grade

NE (National Emergency) Alloy Steels	Replace AISI & SAE
	2300
	3100
NE 4047	3200
NE 8749	4100
	4600
	6100

During the past few years many different types of alloy steels have been developed for the manufacture of all kinds of machines and equipment. Many of these steels contain relatively large quantities of nickel, chromium, vanadium, etc. They were developed by research and experience to meet specific requirements.

### War Time Service for Purchasing Agents

W.P.B. Forms in stock for immediate delivery. Sample set of 150 forms, \$3.50. Write for stock sheet and price list.

**Rieger's Duplicating and  
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Grant 2720

Since most alloying elements were plentiful it was metallurgically sound to create these highly specialized steels to produce maximum physical properties. Because current needs for war production alloy steels are so great, the supply of these various critical alloying elements is entirely inadequate. This problem has forced the development of new steels containing a minimum of alloying elements but of a composition balanced to produce adequate physical properties.

In order to develop "lean" alloy steels all research records were carefully examined. The War Production Board put the best metallurgical brains in the country to work on the problem. The outcome was the creation of a number of analyses now called NE (National Emergency) Steels.

The Metallurgical Section of WPB is very anxious to know how the new NE Steels will do the job and conserve scarce metals. Therefore, all users are urgently requested to report details of each operation such as forging, machining, heat treatment response, tool life, as well as the results of tests, etc., so that this information can be made available to others.

While at the present time only limited heat treating data are on hand, Ryerson will furnish all possible information with each order to give users as much help as possible.

1 1 1

**Dillard Marshall** has been appointed Purchasing Agent for the H. K. Ferguson Co., with temporary offices in Spokane, in connection with the construction of a twenty million dollar magnesium plant in eastern Washington.

1 1 1

**Major Joseph E. Primeau**, Purchasing Agent for the Hotel St. Francis, San Francisco, and President of the Northern California Association of Purchasing Agents, has been called to active duty as chief commissary officer for the Army's West Coast air training program, serving a personnel of 20,000 men in twenty camps in California, Nevada, Arizona, and New Mexico.

### WOMEN PLANT WORKERS REQUIRE A DIFFERENT KIND OF HAND SOAP!



For Over 17 Years  
Women Have Used  
PAX Granulated Skin  
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- 3) Low Alkaline Salts

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DESIGNED, HIGH QUALITY  
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*to help you in*  
**PRODUCTION,  
MAINTENANCE AND  
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### Help for You on War Orders That Require Specialized Degreasing Materials

Plants converting to war supplies are usually confronted with NEW or UNUSUAL cleaning problems that require DIFFERENT degreasing materials and methods to meet war production demands. If this holds true in your plant, let us give you the full benefit of our practical experience on war work.

The FREE services of our Nation-Wide Field Staff, the facilities of our Mechanical Engineering and Chemical Research Laboratories . . . ALL are available to help you obtain the FAST, thorough, SAFE, low-cost results required on any production, maintenance or sanitation cleaning or degreasing operation. Tell us your requirements . . . we can make deliveries from nearby warehouse stocks. Write today . . . no obligation.

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Of course there's no obligation—but ... remember our engineers have the "know-how" that has maintained W-S leadership in the fittings and hydraulic fields for nearly a century. They are at your service in war as in peace. Never hesitate to call on them for expert advice. The Watson-Stillman Co., Roselle, New Jersey.

### WE MIMEOGRAPH OUR PURCHASE ORDERS

(Continued from page 68)

one mimeograph operator. We estimated that under the latter system the cost was only 18 cents per set of orders.

One important advantage we gained from mimeograph duplicating our paper work is that, for all practical purposes, *every copy is an original*. Every copy is sharply black-and-white. The figures are clean-cut, so there's no checking back to see whether what looks like a "3" is really a "3" or whether it's an "8." There is less confusion, too, because each set of orders now involves only one typing and one proofreading, and the possibility of error is cut down proportionately.

But of course the greatest advantage of our present method is the saving of time. Formerly our typists constituted a bottleneck where orders piled up much faster than they could be typed, because the Process Engineers were producing the original specifications much faster than the girls could type them. Now the shoe is on the other foot. Our engineers are producing about sixty sets of orders every day, and the typists are keeping right up with them. Progress in the Process Engineering Department is being accelerated constantly, however, and we expect to reach our goal of turning out 190 sets of orders every day, fairly soon.

Perhaps I should make it clear that our job of purchasing tools and machines isn't finished yet, even though we are now actually producing finished bomber engines. We expect to go on purchasing and installing equipment for about another year, when our plant will

### CONSERVE DIAMONDS! DRESS YOUR GRINDING WHEELS WITH THIS DRESSER!

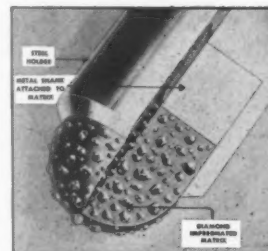
Save diamonds by using Carboley Diamond-Impregnated wheel dressers. Instead of large costly stones these dressers contain a large number of sharp-pointed diamond particles firmly embedded in a special matrix.

No remountings are necessary as the diamonds are permanently held throughout a long useful life. A quarter turn of dresser in holder presents a new cutting surface.

Available in 3 sizes, each suitable for rough, semi-finish and finish dressing operations.

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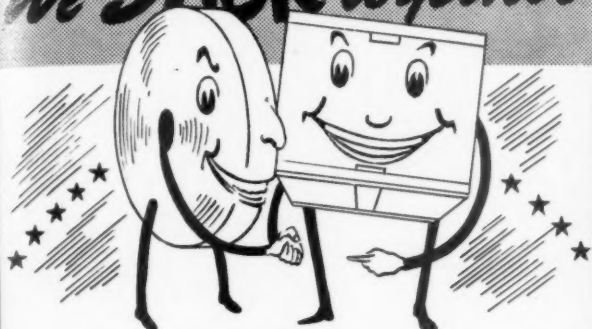
View showing quarter section of dresser.

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WEAR RESISTANT PARTS •  
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Orange Core is America's most popular brand—put it to work for you.

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Sealing Tape

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### For Volume Check-weighing



Volume packaging from bulk requires speed and accuracy! Speed to get the job done . . . accuracy to assure profitable operation. For more than twenty-five years EXACT WEIGHT Scales have performed this service for industry. When volume is heavy buy proven equipment. EXACT WEIGHT Scales are tough, fast, accurate, trouble-free. Write for full details for your firm.

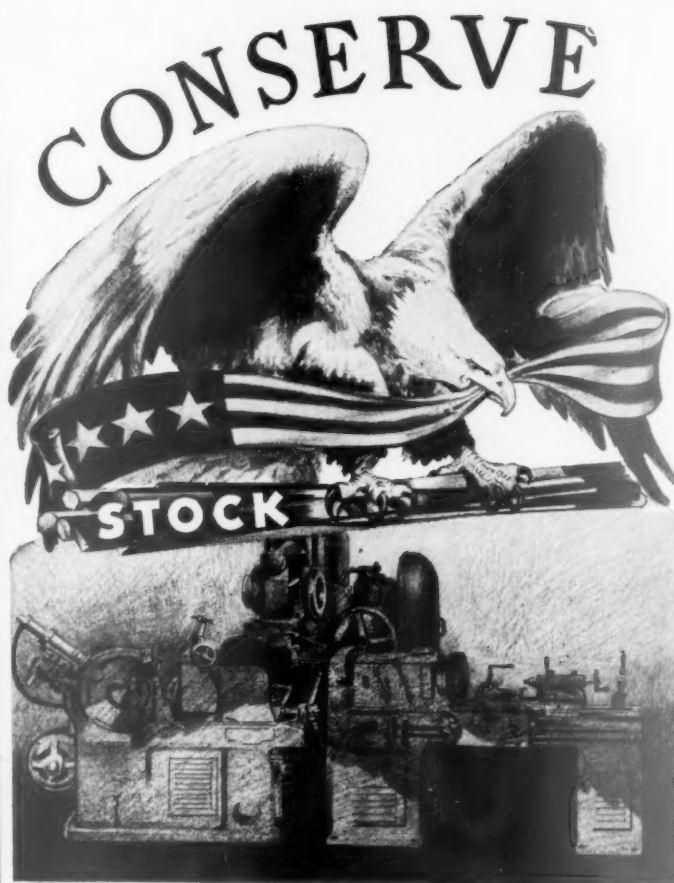
EXACT WEIGHT Scale Model 366. Designed for small sacking operations. Rugged, handy, portable. Strong sack rest . . . dust cover for weights . . . accurate to  $\frac{1}{4}$  oz. . . Capacity to 27 lbs.

The  
Exact Weight  
Scale Company

211 W. Fifth Ave., Columbus, Ohio



THERE IS NO SUBSTITUTE FOR EXACT WEIGHT  
**INDUSTRIAL  
PRECISION SCALES**

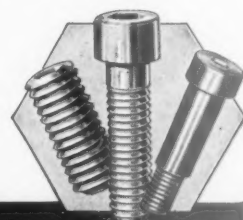


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ALLEN Hollow Screws permit use of lighter machine parts with no loss in essential rigidity of assembly. They assist in maximum streamlining. They save stock on flanges, lugs, all projections or areas for screw fastenings.

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Use a Unishear of the proper capacity for the material to be cut. Have blades in operation before contacting work.

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Dull blades overload a Unishear. Keep blades sharp at all times. They'll cut better and cleaner when sharp. A little time out for sharpening saves a lot of time and trouble on the job.

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Lubricate regularly according to instructions with each Unishear. Be sure to use correct type of lubricant.

### CLEAN FREQUENTLY

Keep Unishears clean at all times and all bolts, screws, nuts tight. Let us know when we can help you.



**KEEP 'EM ON THE JOB  
WITH PROPER CARE**

**STANLEY UNISHEARS**  
THE ELECTRICALLY DRIVEN HAND SHEARS

probably be complete enough so that this large-scale buying will drop off sharply. But even after that we will use the same method for purchasing whatever equipment and tools are needed, because we are thoroughly sold on its simplicity, speed, and efficiency.

1 1 1

### ADJUSTING PURCHASING PRACTICES

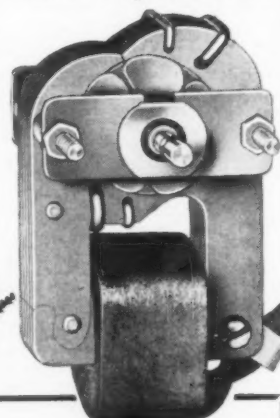
(Continued from page 64)

photograph of the Ilg-equipped Arizona on his office wall ever since, the company tradition of pride in war work has been an inspiration as well as a guide to action on purchasing and production in today's World-wide War for Freedom.

12. *Drawing on Sales Experience.* As illustrated in his employment of an ex-salesman as an expeditor, one of Mr. Hallsteen's sentences, often spoken at meetings of Purchasing Agents' organizations, is that "at some time every salesman should be a Purchasing Agent and every Purchasing Agent should be a salesman." In relations with order departments of the company and particularly in relations with WPB allocators and with suppliers, he has consciously and consistently applied the science and the art of selling, as every Purchasing Agent must these days if he is to be successful.

Mr. Hallsteen's success not only in the present war production era but throughout his career illustrates the soundness of his dictum on selling and also of another which he often gives, especially to aspiring young men. This is that a Purchasing Agent has an opportunity to get acquainted with every department

**G built your small-powered  
motors to LAST..Your  
orders built G. I.  
strength for war pro-  
duction.**



**O**UR plant is now all out in compliance to the War Productions Board. General Industries small-power motors—manufactured commercially in countless thousands for nearly 30 years—can be furnished only on direct Government order. We regret the necessary lapse in supplying our old customers, to whom we wish to say this: In our war work we are building more strength, skill and creative ability for our return to your service.

The GENERAL INDUSTRIES CO., ELYRIA, OHIO



## How About Your Peace Plans?

**W**ILL peace catch you without a workable program to supply the inevitable demand for the products innumerable that will be needed to replace those now off the market? The old designs will be sorely outmoded. New money will surely demand new products.

Newton workmanship—always good, but now much improved through exacting war work—will be ready and waiting to help you to claim your new market. Busy as we are, we are always glad to "look ahead" with future customers.

THE NEWTON MFG. CO., 11 Riverside Ave., Plainville, Conn.

### NEWTON SCREW MACHINE PARTS (SEPARATE OR ASSEMBLED)

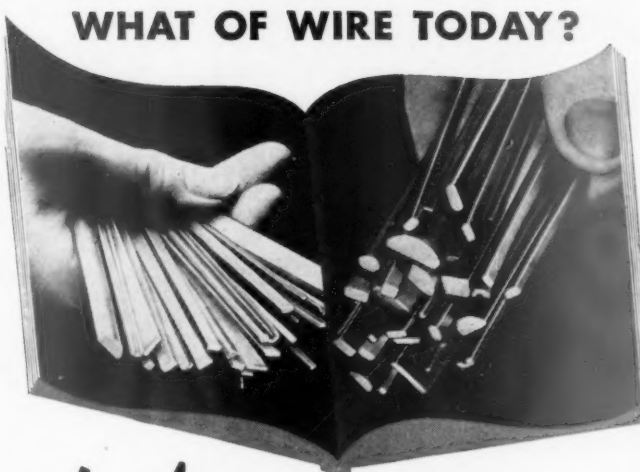


Here we illustrate a representative selection of PROGRESSIVE special fastenings that are ably serving as vital parts of Uncle Sam's fighting equipment. From gun cleaning implements to ship navigation instruments, PROGRESSIVE products are carrying out their assignments *unfailingly*.

In making these special headed and threaded parts, *rapidly and accurately*, PROGRESSIVE finds its 40-year backlog of experience an invaluable asset. When victory is achieved, this same knowledge and skill—enriched by added years of war experience—will be at the disposal of industry for peace-time assignments.

THE PROGRESSIVE MFG. COMPANY  
Torrington, Connecticut

## WHAT OF WIRE TODAY?



## Yes! WHAT OF WIRE?

The immediate prospect is for little, *if any*, improvement in the delivery or allocation conditions. Be Scotch with your handling of the wire you need. Plan its use. Cut waste.

**In Shaped Wire** if you have not already adopted standard shapes and analyses, it will be prudent to do so at once.

**For General Wire** check to see that your requisitions are cut to an irreducible minimum.

**For Welding Wire** use correct analyses and proper size—lean toward larger sizes. Don't permit bending of electrodes. See that each one is used right down to the holder—and that there is no wasteful excess deposit in the weld.

If we can cooperate in any way, call on us—remembering that we operate in the sincere belief that we serve you best by allowing nothing to interfere with giving the wire needs of the armed forces first call on our production.

## PAGE FOR WIRE

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## Mathematical Police FOR War-Production Plants



*This High Speed Reset Counter gives up-to-the-minute records on the production of coil winders, fast automatics, etc. . . points out any needs for machine-adjustments or maintenance.*

Veeder-Root Counting Devices, installed on all war-production machines and processes, will continuously supply facts-in-figures that serve to indicate whether your machines are being operated correctly, whether their drives are delivering full power, when maintenance is coming due. And they will give other useful information, in any terms or units of performance, which will help to avoid waste, errors, delays. See how your vital war work will benefit from the protection of Veeder-Root Devices that help to *keep everything in line and under control.* Write.

### VEEDER-ROOT Counting Devices

HARTFORD, CONNECTICUT

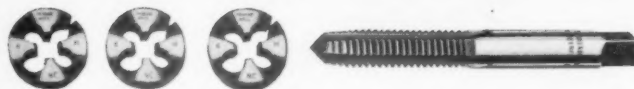
*Offices in Principal Cities*

of a company and therefore has a specially good opportunity to avoid getting into a rut and to become a general executive.

After graduation as a B. S. in civil engineering from Armour Institute in 1914, and work in the engineering department of the City of Chicago, he entered the employ of Ilg in August, 1916, as a salesman in Chicago. He worked in the sales department until the end of 1917. Then, happening to be held in the offices pending recuperation from an appendicitis operation, he noted confusion in the handling of purchase orders for war production. He suggested to Robert A. Ilg, the founder of the company and then secretary, now retired although still a Director, that the organization needed a Purchasing Department. Two weeks after that Mr. Ilg gave him an opportunity to prove that this was the case.

At the same time Mr. Ilg handed to his embryo P.A. an application blank for membership in the Purchasing Agents Association of Chicago. Mr. Hallsteen filled it out, turned it in, joined, and through the resulting contacts got the opportunity to visit the purchasing departments of various plants. He credits them with ideas used in laying out the Ilg Purchasing Department. He has actively participated in the give-and-take of the Chicago Association and the National Association of Purchasing Agents ever since that start. He was president of the Chicago Association in 1931. In 1940 he was a District Vice-President of the National Association. On his office wall there is a testimonial on account of his services as a member of its executive committee. He was general convention chairman of the 1941 gathering on wartime purchasing, held in Chicago.

Advancement within the Ilg organization was also



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★ There must be no loss or waste of war materials. Now, more than ever before, every shipment must be a PERFECT shipment. Securely sealed shipments conserve time, valuable materials, and transportation.

★ The herringbone glue surface on SAFETEX Gummed Tape is geared to the container—it will HOLD—it will insure safe arrival—it will meet war production demands.



**SAFETEX**  
HERRINGBONE GUMMED  
**GUMMED TAPE**

Made exclusively by **CENTRAL PAPER CO., MENASHA, WIS.**

**JUST  
LIKE  
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— it cuts metal — bolts up to 3/4" diameter, and cuts special hardened steel. Sizes from a "hip pocket" cutters to a 3 1/2 foot giant. Stock models to meet working conditions and cutting problems. Every one of amazing capacity, endurance and ease of operation. Fine tools precision built by skilled tool makers.

Send for this catalog giving valuable information about time and labor saving in using two-hand portable metal cutters. Note: We are using every available man, twenty-four hours a day, to meet Government requirements, and especially to meet our jobbers' needs with the earliest possible shipments.



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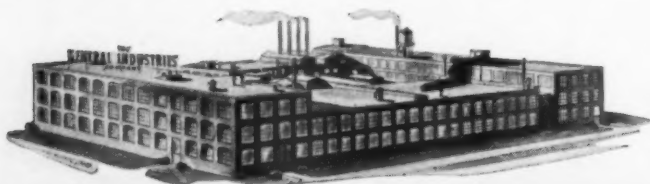
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marked. He says with a grin, "A willing horse will get a job." He has acquired several. In 1922 he took on the office management. In 1928, when Mr. Ilg decided to retire, he named Mr. Hallsteen to be Treasurer of the Company. In 1930 he became also a Vice-President. He remarks, modestly, that this was chiefly to enable him to sign contracts. Last March at a dinner meeting of the company's Twenty-Five Year Club, a gold watch was presented to him and to nine others—"In Recognition 25 Years Loyal Service—1941."

Although a hard worker, he takes recreation, sometimes during lunch hours in the department heads' billiard room in the Ilg plant tower, but more often at golf. The game is his hobby. He is responsible for the creation and maintenance of the unique nine-hole course for Ilg employees on the three-acre lot immediately adjoining the plant to the west. When he had to encroach on this for the new storeroom addition it was like making a hole in seven or eight. Mr. Hallsteen, under his wife's management at their home in Kenilworth, a North Shore suburb, also indulges in gardening. Incidentally, he finds time to be active in the affairs of the Northwest Associated Manufacturers', a group in the vicinity of the Ilg plant, and in the local Y. M. C. A. He is a member of the Kenilworth Club and a 32nd Degree Mason. In these war times he is also a member of the Kenilworth Defense Council, being zone chief for its zone number 12 which includes fifty homes. In this activity an assistant chief, two fire wardens, and two police wardens report to him.

Mr. Hallsteen's experiences seem to indicate pretty well that a Purchasing Agent can serve his company and his country well in peace time and in war time.



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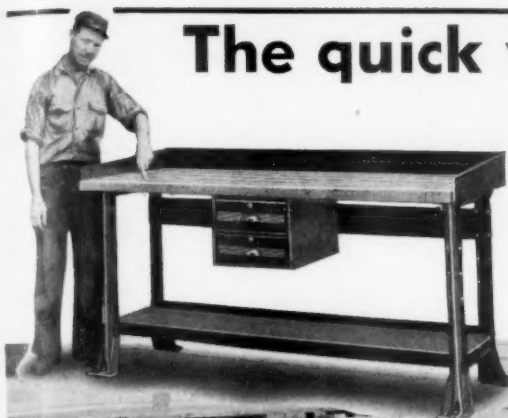


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Alert buyers save time and money by installing

### HALLOWELL WORK-BENCHES

instead of building their own which necessitates making detailed drawings, figuring and specifying the multifarious sizes of lumber needed, not to mention the carpentry involved. Among the 1367 "Hallowell" bench combinations you are sure to find the one you need and ready made. All combine the advantages of smooth, splinterproof tops with rigidity, rendering costly bolting to the floor unnecessary.



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### HALLOWELL SHOP STOOLS

Many comfortable and sturdy styles available. Operators prefer the "Hallowell". Welded throughout, solid as a rock.



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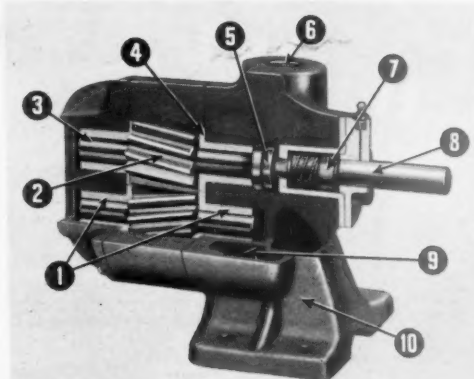
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- 4 WEAR PLATES protect face and back plates from wear by foreign matter.
- 5 THRUST COLLAR on drive shaft plus sliding joint takes up shock and thrust.
- 6 FOUR PIPE OPENINGS provide eight different piping arrangements.
- 7 MECHANICAL SEAL reduces power requirements and keeps leakage to minimum.
- 8 SPLINED DRIVE SHAFT forms sliding joint with gear to absorb shock and thrust.
- 9 ALWAYS PRIMED — after once primed and in operation.
- 10 ONE PIECE BACKPLATE protects working parts from stress and strain.

Write for catalog 937 with illustrations, cutaway views, drawings, dimension and pumping capacity tables, and complete information on Roper Pumps.

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**ROPER Rotary PUMPS**

## ALL-OUT PRODUCTION

60 minutes every hour



★  
Minutes in war production are too precious to waste. Even slight delays may cost the life of a fighting man!  
★

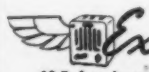
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**EXECUTONE** is now saving time and money for over 72,000 alert business men. Your business needs Executone... step-up production... increase efficiency... promote perfect co-ordination between departments... pays for itself in man-hours saved.

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additional stations at nominal cost.

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The "Champion" steel type holder (Patented) permits rapid interchangeable marking of flat, curved, concave or convex surfaces... assuring alignment and perfect spacing of characters. Pressure of thumb on spring actuated button releases type for instant changing. Holder shown is hand style. Also made with shank, for press production marking.



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**VASCOLOY RAMET CORPORATION**

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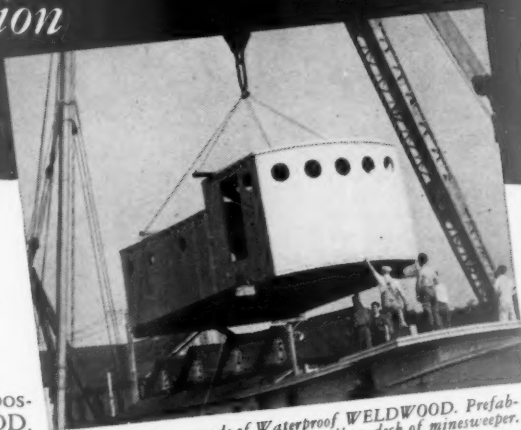
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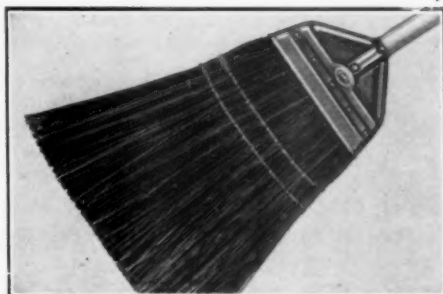
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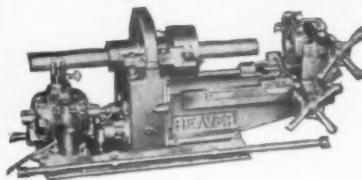
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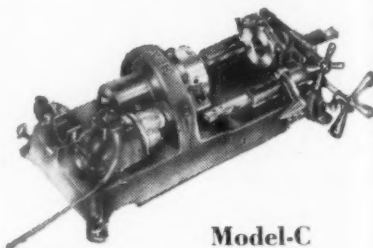


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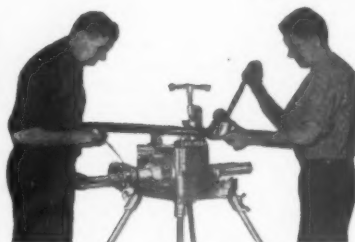
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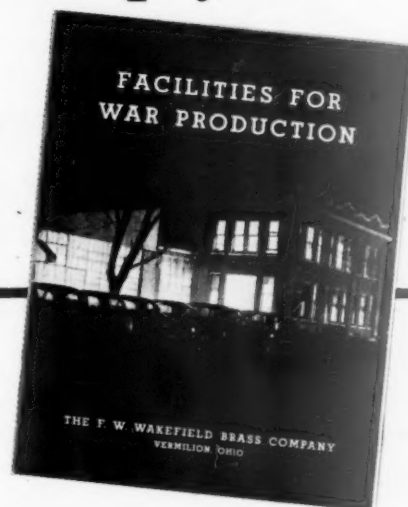


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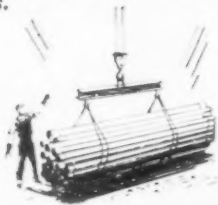
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**Here are some helpful tips you can pass along . . . things that mean even longer life for Roebling "Blue Center" Steel Wire Rope . . . steel saved for U. S. at War!**

**Lesson One:**—take a piece of string and pull it gently . . . you'll find it will stand an unusual strain before breaking. But snap the same string quickly and it's easily broken.

Same thing applies to a wire rope. In any kind of hoisting operation, it's vital that the rope should have no slack at the beginning of the lift—else the load might be applied suddenly and then the stress on the rope will be greatly in excess of that due to the load being handled. So *don't jerk your ropes.*



**Lesson Two:**—a hammer weighing only a few pounds can produce a blow having the force of a couple of tons. The load on a wire rope is like a hammer—striking a blow on the rope whenever you start the load too

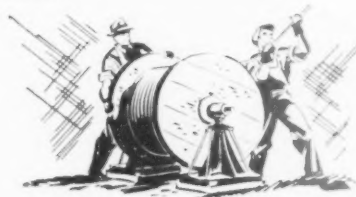
quickly. Even without slack, the rope gets a tremendous impact when power is applied too fast—as in the case, for instance, of a crane or derrick operator who is raising his loads too fast.

And it's the same when the rope is going the other way. When even a light load is stopped suddenly while being lowered, the rope is subjected to a much greater strain than the equipment could ever apply to it in hoisting. So *don't jolt your loads.* Brakes should be applied smoothly and uniformly, and at the slightest sign of "grab" should be eased off. Brake your load over a longer period and your rope will last over a longer period.

In general, shock loads will remove from the rope the very elasticity that is put in to absorb normal impact, while careful handling will preserve the rope's elasticity and keep it in condition to deliver long life. Of course, the way a machine is run always affects its general maintenance. It's a well-known fact that some people are harder on machinery than others. An operator can push a machine (and a rope) just so far to get extra work out of it—beyond that, the punishment takes its toll of both the machine and the rope—and breakage begins to cost more than the extra work is worth. But in these days when rope steel is vital to the war effort, *wire rope must not be abused.*

**Lesson Three:**—a pitch-fork was not made to shovel sand. Likewise, "borrowing" ropes is very seldom practical. In these

times of priorities and shortages, some operators have been "borrowing" ropes from one operation and installing them on another.



Before you "borrow" a rope, make a careful analysis to see whether you won't get better ultimate economy out of putting the right new rope on the equipment that needs it, and taking the necessary steps to preserve the used rope and make it last on the job it's now doing.

Roebling "Blue Center" Steel Wire Rope is made to deliver a long lifetime of service—it has built a reputation for just that, wherever wire rope has a routine or unusual job to do."



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More ways to help you conserve wire rope coming in this space next month.



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*"Blue Center"*  
**STEEL WIRE ROPE**  
PREFORMED OR NON-PREFORMED

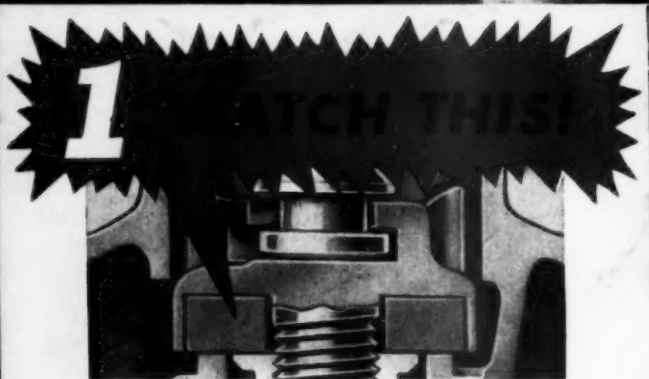


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When installing pipe or valves, clean interiors and threads of both to keep foreign matter off valve seat.

Install valves with spindle in upright position.

When conditions are extraordinarily severe, apply inlet pressure *above* seat; in ordinary service pressure *beneath* seat is okay.

Before disassembling valve put disc in open position.

As soon as leakage begins, replace disc to avoid cutting seat.

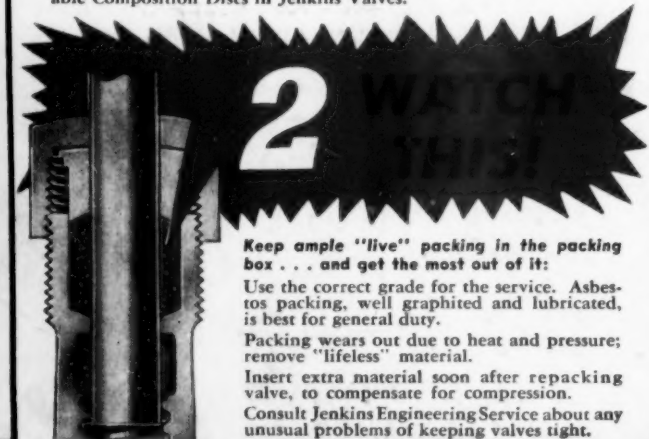
See that disc nut is tightened sufficiently to hold disc in place but not so tight that it distorts it.

Do not apply extra leverage or wrench to wheel when ordinary effort fails to close valve tightly. Inspect seats for any damage to seat or disc; see that disc is correct type.

After closing a hot valve, follow up wheel when valve cools. Contraction may lessen force on disc, permitting small leaks of steam that cut the seat.

For throttling service use the special Jenkins Throttling Nut in your Jenkins Valves.

Most important, use correct composition disc for the service. Follow the chart in Jenkins "Guide to Correct Disc Usage" . . . get a copy from your local Jenkins Distributor. And, use Jenkins Renewable Composition Discs in Jenkins Valves.



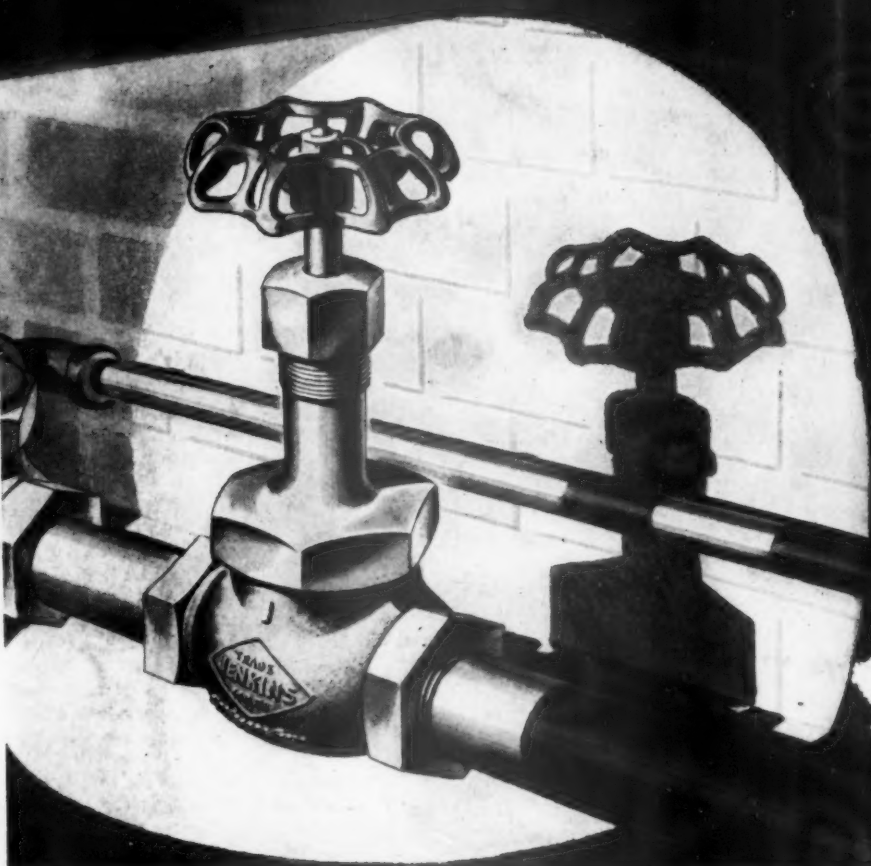
Keep ample "live" packing in the packing box . . . and get the most out of it:

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Insert extra material soon after repacking valve, to compensate for compression.

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**Today it's more important than ever —**

**To Replace Discs and Packing Before Leaks Can Cause Interruption of Vital Production Jobs**

**\* \* To Take the Simple Steps that Make Them Last Longer . . . to Conserve Scarce Materials!**

Leaky valves can waste power, consume man-hours, interrupt production. Leaky valves can destroy themselves . . . and valves are scarce!

A few leaky valves in *your* plant may not seem important. But, multiply that small waste by thousands of plants and buildings, and you have a major handicap to the war effort! You have always been on the watch for leaks. Today, it's important to "double your watch" . . . to prevent leaks *before they start*.

A large share of your valves probably have Renewable Composition

Disc seats. These valves are easiest to keep tight. It's simple to know when the seat or packing box is about ready to leak. And, it's simple to replace the Renewable Composition Disc, or refill the packing box. Do it *in time*!

## **STOP WASTES OF DISCS AND PACKING**

They are made of scarce rubber, plastics, asbestos, brass. There are many ways to make discs and packing last longer. The column at left gives pointers worth reading.

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**JENKINS VALVES**

**BRONZE...IRON...STEEL**